DEPARTMENT OF THE ARMY
PUBLIC WORKS BUSINESS CENTER
FORT BRAGG GARRISON COMMAND (AIRBORNE)
INSTALLATION MANAGEMENT AGENCY
FORT BRAGG, NORTH CAROLINA

Environmental Assessment
and
Draft Finding of No Significant Impact
for

LAND CLEARING AND INERT DEBRIS (LCID) AND CONSTRUCTION & DEMOLITION (C&D) LANDFILL EXPANSION PROJECT NUMBER FW-00051-2 FORT BRAGG, NORTH CAROLINA

12 August 2004

Prepared by:

Public Works Business Center
Fort Bragg Garrison Command (Airborne)
Installation Management Agency
ATTN: AFZA-PW-E
Fort Bragg, North Carolina 28310

In compliance with the
National Environmental Policy Act of 1969

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for the proposed

Land Clearing and Inert Debris (LCID) and Construction and Demolition (C&D) Landfill Expansion

Project Number FW-00051-2
Fort Bragg, North Carolina

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DEPARTMENT OF THE ARMY
PUBLIC WORKS BUSINESS CENTER
FORT BRAGG GARRISON COMMAND (AIRBORNE)
INSTALLATION MANAGEMENT AGENCY
FORT BRAGG, NORTH CAROLINA

DRAFT FINDING OF NO SIGNIFICANT IMPACT

LAND CLEARING AND INERT DEBRIS (LCID) AND CONSTRUCTION AND DEMOLITION (C&D) LANDFILL EXPANSION FORT BRAGG MILITARY RESERVATION, NORTH CAROLINA

1. Proposed Action. The Army proposes to expand and combine the LCID and C&D Landfills.

2. Description of Alternatives. Two alternatives including Proposed Action were considered. These were the Combination and Expansion of the two Landfills, and the No Action Alternative which provides the baseline for forecasting the effects of adopting the Proposed Action.

3. Anticipated Environmental Impacts. Implementing the proposed action would provide expanded landfill capacity without causing significantly adverse effect to the post's biological, cultural, physical, social or economic resources. Mitigation in the form of increased groundwater monitoring and replanting of trees to account for impacts is required.

4. Conclusion. Based on a review of the information contained in the project's Environmental Assessment, combination and expansion of the LCID and C&D Landfills on Fort Bragg, North Carolina, would not constitute a major federal action significantly affecting the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act. Accordingly, preparation of an Environmental Impact Statement is not required. Therefore, the draft Finding of No Significant Impact (FNSI) is being made available for public review and comment for 30 days. A final decision would be rendered upon review and due consideration of the comments received.

5. Effective Date. The proposed project would be constructed in 2004.

6. Public Availability. The Environmental Assessment (EA) and this draft FNSI for the Proposed Action are available for public inspection at the Cumberland County Public Library in Fayetteville, the Post Library and Command Information Center, Fort Bragg, North Carolina, and online at http://www.bragg.army.mil/envbr/nepa_review.htm.

7. Requests for additional information or submittal of written comments may be made within 30 days after first publication date to Public Works Business Center, Headquarters, Fort Bragg Garrison Command (Airborne), Installation Management Agency, ATTN: AFZA-PW-E, Fort Bragg, NC 28310.

AL AYCOCK
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Garrison Commander

SUMMARY

This Environmental Assessment (EA) provides an analysis of the environmental and socioeconomic effects of combining the Lamont Road Land Clearing and Inert Debris (LCID) Landfill and the Lamont Road Construction and Demolition Debris (C&D) Landfill located on Fort Bragg Military Reservation in Cumberland County, North Carolina. Implementing this action would combine the 32.73 acre LCID Landfill and the 41.23 acre C&D Landfill into one landfill of approximately 45-acres. Several areas currently included in the existing permitted landfill boundaries would be converted to alternate but related uses and a portion of the C& D Landfill would be closed, thereby reducing the acreage of the new combined active Landfill. The Combined Landfill would encompass current designated landfill area and an approximately 200-foot buffer area that currently separates the two landfills. Additional acreage is derived from the adjustment of current permitted fill elevation.

An alternative to the Proposed Action (specified as the preferred alternative) is the No Action Alternative of continuing the operation of two separate landfills. The No Action Alternative would directly result in the LCID Landfill reaching its holding capacity and its subsequent closure within approximately one year's time. This would result in waste being transported to a regional LCID landfill. Both Alternatives would include implementation of existing Installation policies regarding waste reduction and sustainable operations standards.

Two other alternatives were considered but discarded because they did not meet specified criteria or resulted in potentially significant impacts. These rejected alternatives were (a) transport of the LCID waste to a regional facility once the LCID landfill reached capacity, and (b) construction of a new landfill on unimproved land elsewhere on the Installation.

The only environmental resource issue that presents a source of concern is the pollution of groundwater as a result of landfill operations. Groundwater monitoring results from the existing landfills show several standard exceedances. After thorough discussion, we conclude the landfill expansion would not pose a significant threat to groundwater quality because the combined landfill would dispose of relatively inert materials, and it would be constructed and operated in compliance with the proposed North Carolina statutes that are environmentally stringent.

This EA addresses the potential environmental impacts of the alternatives, concludes that the Proposed Action is environmentally acceptable, and recommends that a draft Finding of No Significant Impact be published for public review and comment prior to any final decision on the proposed action.

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ENVIRONMENTAL ASSESSMENT

Land Clearing and Inert Debris (LCID) and Construction
and Demolition (C&D) Landfill Expansion
Fort Bragg, North Carolina

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 PURPOSE OF THE PROJECT

The purpose of this project is to expand and combine the Land Clearing and Inert Debris (LCID) Landfill and the Construction and Demolition Debris (C&D) Landfill located on the eastern side of Lamont Road, Fort Bragg, North Carolina (See Map in Appendix A). Both landfills are currently owned and operated by Fort Bragg. The LCID Landfill is approximately 32.73 acres (per survey dated July 29, 1998 (Plat Book 97, page 160, dated August 10, 1998)) and the C&D Landfill is approximately 41.23 acres (per survey dated July 29, 1998 (Plat Book 97, page 160, dated August 10, 1998) and June 14, 1999 (Plat Book 99, page 200, dated June 15, 1999)). Under current circumstances, these two landfills are operating in the immediate vicinity of one another under separate permits with a dividing area of approximately 200 feet. There are some present and historical differences in the type of waste accepted by each facility.

The LCID was originally operated as a demolition landfill until the early 1980s when North Carolina Solid Waste Management Rules were initiated and the landfill was permitted as a LCID Landfill. In 1987, Permit No. 26-G was issued to Fort Bragg to operate a demolition landfill on Lamont Road adjacent to the site of the LCID Landfill. Because the landfills were operating under separate permits, a buffer area was established between them. Past and present waste separation regulations described the type of wastes that could be deposited in each landfill (See Appendix C – Landfill Disposal Instructions). Current regulations indicate that the C&D landfill can accept wastes that are accepted in LCID landfills, but the reverse is not true. However, there is historical evidence that the LCID landfill did accept demolition materials in the past, resulting in its treatment as a demolition landfill for regulatory purposes. Rules .0501 - .0510 of Title 15A Subchapter 13B of the North Carolina Administrative Code dictate the operational procedures for landfills and would treat both landfills similarly for all regulatory and closure purposes. Combination of the landfills would result in one permitted landfill that would be capable of receiving Land Clearing Debris, Asphalt, Construction and Demolition Debris, and Inert Debris. Only two options appear to be reasonable for this action; they are either to combine the landfills or to continue operating two separate landfills. Continuing to operate separate landfills is only a temporary solution, as the LCID would likely reach its capacity within a year, forcing costly transport of waste to regional facilities, many of which have limited life expectancies.

1.2 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

Fort Bragg is preparing this Environmental Assessment (EA) to evaluate and compare the environmental effects of the proposed action and alternatives on the natural and human environment at Fort Bragg, NC. This EA is prepared in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations, Army Regulation (AR) 200-2, and USAIC Regulation 200-1. Environmental Analysis of Army Actions; Final Rule (32 CFR Part 651, 29 March 2001) implements the National Environmental Policy Act of 1969 and requires Army installations to consider the environmental impacts of a proposed action and its alternatives prior to making a final decision on a course of action. This document consists of an objective appraisal of the potential effects, both negative and positive, of the proposed action and its alternatives on the natural and human environment, as well as an appraisal of the cumulative effects of said actions in a specifically defined region of influence. It also contains discussions of mitigation (as needed), permit requirements, and findings and conclusions in accordance with NEPA guidelines. The EA provides the environmental information and opportunity for public comment needed to help make an informed decision on the proposed action.

1.3 NEED FOR THE PROPOSED ACTION

There is a need to expand the current landfill capacity at Fort Bragg. Failure to expand and combine the C&D and LCID landfills would leave Fort Bragg without sufficient on-post disposal capability. Full development of the site is expected to allow usage for the next fourteen to fifteen years. Failure to develop the site would result in the closure of the LCID Landfill within approximately one year, the deposition of subsequent LCID waste into the C&D Landfill, and the resultant premature closure of that Landfill. Waste would then have to be transported to regional landfill facilities off the Installation.

This project is necessary to provide the Installation with an expanded capacity to accept waste in this location. The buffer area between the landfills is highly disturbed, non-vegetated, and considered ecologically insignificant under most circumstances. Some of the expansion area contains quality habitat, and effects to this area would be mitigated. The combined, expanded landfill would allow for a more natural appearance of the area upon the joint landfill closure and restoration of the area as an open field of grasses and herbaceous cover.

1.3.1 GENERAL OBJECTIVES

Installation policies and state regulations require several factors to be considered and prioritized for the activities described in the proposed action. Additional objectives of the Proposed Action are:

- *Public safety*. Maintain a 500-foot buffer from private dwellings and wells to waste.

- *Natural Resources Management*. Maintain a 50-foot buffer from streams and rivers to waste.
- *Environmental Compliance*. Remain in compliance with all applicable environmental laws, regulations, and policies.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA)

2.1 DESCRIPTION OF THE PROPOSED ACTION

Fort Bragg proposes to combine the LCID and C&D Landfills by expanding the facilities into a 200-foot buffer that separates the two existing landfills. A municipal solid waste transfer station is located to the south of the two landfills and a large detention basin is located to the northwest of the facilities (See Appendix D). The new design would optimize use of borrow material in the 200-foot buffer and stockpile areas for daily cover. The plan for the proposed action would include design of access roads, grading, storm drainage, erosion control measures, and relocation of electric utilities. The scope of work would include revision of operations plans to include closure and gas monitoring plans, personnel training, waste inspection, and record keeping. North Carolina Department of Environment and Natural Resources (NCDENR) has proposed new regulations (15A NCAC 13B .0540(2)(b)) for C&D landfills that were not in effect at the time of preparation of preliminary plans, but would likely go into effect before the proposed action is initiated. As a result, all plans have been designed to the standard of the new regulations referenced within this document.

The new combined landfill is required by Rules .0501 - .0510 of Title 15A Subchapter 13B of the North Carolina Administrative Code to maintain the following regulatory buffers:

- 200-foot buffer between property line and waste (per Solid Waste Section Policy memorandum)
- 500-foot buffer from private dwellings and wells to waste
- 50-foot buffer from streams and rivers to waste

Detailed closure procedures, monitoring procedures, and erosion control plans would be included in the construction permit application and are considered part of the proposed action. Generally, once the landfill is full, it would be covered with a composite layer. Composite layers are characterized by the presence of more than one material. First, a layer of soil is placed where the landfill would hold waste. Clay or some other earth that does not allow water to pass through easily is used for this layer. This keeps rainwater from entering the landfill and greatly reduces the amount of leachate created. Systems that check the air, groundwater and surface water (lakes and streams) for contamination would be installed. These systems are maintained for 30 years.

2.2 ALTERNATIVES CONSIDERED

2.2.1 ALTERNATIVE I: "NO ACTION/STATUS-QUO"

The "No Action" alternative for this EA would mean significant resources would be diverted from other sources to compensate for the funds required to transport waste to municipal facilities. There are no existing facilities on Fort Bragg capable of receiving the waste that is currently

accepted by the LCID Landfill other than the adjacent C&D Landfill. The LCID Landfill has reached its carrying capacity under its current permit and the proposed action would expand that capacity. The area dividing the landfills that is proposed for development under the proposed action is highly disturbed and unvegetated.

Despite ongoing efforts to divert recyclable materials from the landfill, the rate of waste going in exceeds that which is coming out. In addition, failure to either upgrade or expand the LCID Landfill would have a negative regional effect because the landfills in North Carolina have an approximate life span of only sixteen years (North Carolina, 2003). This alternative would not satisfy Fort Bragg's immediate need to expand its waste containment capabilities.

2.2.2 ALTERNATIVE II: "LANDFILL COMBINATION AND EXPANSION" (PREFERRED ALTERNATIVE)

This alternative would involve the combination and expansion of the existing facilities with the construction of associated facilities and initiation of associated policies as described under section 2.1 Description of Proposed Action. This alternative would involve initiating a new plan of action for a combined landfill that would result in a structured and graded appearance of the closed facility.

This overall LCID/C&D Landfill expansion would be designed to occur in three five-year phases (See Appendix D). Initial work would involve the installation of erosion control devices for the Phase I area. As excavation continues in Phase I, the excavation area would expand into the future Phase II to meet operational cover requirements. Phase I is anticipated to be developed as a complete phase. Once a phase is excavated to base grade, it would be certified prior to waste placement. Excavation and filling would begin in the southern and eastern portions of Phase I, progressing north to Phases II and III. The third phase would occur over the existing LCID Landfill. Once a lift is in place, filling would begin again on an adjacent lift along the southern edge of the phase and progress toward the northern edge of the phase. Positive drainage would be maintained to the existing retention basin located on the northwest corner of the site. Perimeter drainage channels, slope drains, down chutes and diversion berms would convey all storm water runoff from the landfill to the retention basin that would remain as the main erosion control feature for the landfill. Upon closure, all slopes would encourage the direction of water flow toward the retention pond, where any undesirable materials would have the opportunity to settle out of the water before it enters natural waterways.

It is expected that full development (3 phases) of the site would allow use as a LCID/C&D Landfill for the next fourteen to fifteen years. The lifetime is based on projected waste disposal rate for the site of 228,000 tons per year (HDR Engineering, April 2004). This projection is based on historical rates for the LCID and C&D Landfill and Fort Bragg's knowledge of factors affecting their

waste stream. Phases I & II have a projected operational life of approximately five years with estimated waste volumes of approximately 854,000 and 1,079,000 Cubic Yards (CY) respectively. Phase III has an operational life of approximately four years with an estimated waste volume of 779,000 CY. Approximately 225,600 CY of operational soil is anticipated to be available from the excavation of the proposed LCID/C&D Landfill (See Table 1 below). It appears there may be a soil deficit on the site. Additional material may be transported from the borrow area across the road to the west as necessary.

TABLE 1		Volume	Gross	Estimated Volume		Compacted	Erosion	Excess	Estimated	
Phase	Area	Excavated	Capacity	Waste	Cover Soil	Soil Liner	Layer	Soil	Fill Rate	Life
	(acres)	(cy)	(cy)	(cy)	(cy)	(cy)	(cy)	(cy)	(tpy)	(years)
I	15	39,061	974,700	854,000	85,000	36,000	36,000	-81,939	227,712	4.6
II	24	185,514	1,245,100	1,079,000	108,000	58,000	58,000	19,514	227,712	5.9
III	6	0	871,600	779,000	78,000	15,000	15,000	-93,000	227,712	4.2
Total	45	224,575	3,091,400	2,712,000	272,225	109,000	109,000	-155,425		14.7

NOTES:
Table courtesy of HDR Engineering, Inc.
· Volume Excavated & Gross Capacity are based on computer calculated volumes from the Phase I and II cap shown on the Proposed Final Grade Drawing of the permit application.
· Estimate of excess soil assumes soil for compacted liner comes from the clay stockpile across from Lamont Road.

10 : 1 waste to cover ratio assumed for both scenarios
Cover Soil includes daily and intermediate soil
1.5 ft Each Final Cover Layer (allocated by phase, not area at final grades)
2,248 lb/cy effective waste density (average density over from 10/98 to 6/03)
7,816 tons/mo - C&D average from Oct. 1998 through June 2003
11,160 tons/mo - LCID average from Oct. 1998 through June 2003
18,976 tons/mo - Total average of C&D and LCID
227,712 tpy - based on average
100,000 cy of clay stockpiled across Lamont Road in the borrow area available for use as soil liner

Area within the current boundaries of the LCID Landfill would be converted to a concrete recycling facility and other uses concurrent with landfill operation. New Installation initiatives have resulted in the increase in the amount of material that is recycled and Fort Bragg has set a goal of zero landfill waste by the year 2025. The land surrounding the landfill may be used for additional recycling efforts. These activities will continue regardless of which alternative is selected. A detailed closure plan is described in the construction permit application to North Carolina Department of Environment and Natural Resources (NCDENR), that provides a description of the proposed activities associated with this alternative. Additionally, this alternative would involve the closure of approximately two acres of the C&D Landfill in accordance with applicable regulations. Support facilities include construction outside the perimeter of the complex, consisting of minimal storm drainage and grading and other uses that are undefined (such as a concrete recycling facility).

2.2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.2.3.1 "TRANSPORTATION OF LCID WASTE TO A REGIONAL FACILITY"

This alternative would involve transport of LCID waste to a regional facility once the installation LCID landfill reaches capacity. However, it is likely that the waste would be brought to the C&D Landfill, leading to a premature closure of this landfill and the costly transport of future construction and demolition waste to off-Post facilities. Waste brought to a regional facility would result in regional environmental impacts similar to those described in this document under impacts from Alternative I, except that the impacts would occur off the Installation. This could include negative consequences such as impacts to water quality, decreases in the amount of land available for development, wildlife habitat, and recreational opportunities. Because the potential impacts from the transportation of waste to an off-base, regional facility are anticipated to be greater than or equal to the impacts of disposing of these materials on base, the environmental considerations for this alternative were not fully evaluated in this EA.

2.2.3.2 "NEW CONSTRUCTION ON UNIMPROVED LAND"

A new landfill on Fort Bragg would be subject to compliance siting criteria to make it compatible with landfill use function on the Installation. Some of the criteria for the site selection of the current landfill included:

- The availability of a large amount of fill material from a nearby quarry to periodically cover the waste.
- A location proximate to the main Cantonment area of Fort Bragg to reduce transport distance.
- Minimization of impacts to wildlife and their habitat because impacts were vertical instead of horizontal.
- The existence of groundwater monitoring wells.
- A large hole in the ground was already there in the form of an existing borrow pit.

The construction of a new landfill would have involved construction of a facility capable of receiving the type of waste that is currently stored within the LCID facility. All associated facilities would have to be constructed such as a waste transfer facility, a recycling facility, and staff buildings. Such construction would require significantly more resources than the Preferred Alternative of combining the landfill. Additionally, construction of an entirely new landfill would require the commitment of a large amount of real estate. To construct a new LCID landfill would require, at a minimum, the conversion of 70 to 80 acres of training land that currently support Fort Bragg's essential mission.

Construction of this facility from scratch would result in significant detrimental effects to the mission, as well as potential significant effects to the environment and other resources. This

alternative would require significantly more earthmoving and thus effects to soils and vegetation. Additionally, Fort Bragg has many acres of prime wildlife habitat and endangered species exist throughout the Installation. A new construction site would likely involve negative impacts to vegetation and wildlife through destruction of habitat. The preferred alternative would expand landfill capacity on what is primarily already a highly disturbed area. In all likelihood, a new area may entail serious detriment to floral and faunal species and their habitat, thus requiring mitigation efforts and costs. As the environmental considerations with this alternative potentially would significantly impact 75 or more acres of previously undisturbed land, this alternative was not considered in this EA.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

After examination, certain resources were determined to exhibit no significant consequences as a result of the proposed action. Resource areas considered, but excluded from further examination include: climate, telecommunications, and socioeconomic topics (except Environmental Justice and Protection of Children). This EA focuses on the site-specific concerns potentially affected by the proposed action. The existing environment for each resource area is addressed, followed by a description of the anticipated effects of each alternative on the resource. A comparison of cumulative effects of alternatives on each resource area is then described. The final subdivision of each resource area illustrates appropriate or required mitigation that would be conducted for each resource discussed.

The Council on Environmental Quality (CEQ) defines cumulative impacts as the "impact on the environment which results from the incremental impact of the action(s) when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (CEQ, 1978). The actions proposed under the alternatives in this EA, in addition to proposed projects in the geographic area, have the possibility to result in either negative or positive impacts in a cumulative manner. Cumulative impacts can accrue from individually minor but collectively significant actions taking place over an extended period of time. Taken in sum, all environmental damage is incremental occurring one action at a time. The developments that could result in cumulative impacts when combined with this project all occur within a well-defined and specific geographical (spatial) Region Of Influence (ROI); in addition, the projects are also limited on a temporal basis, they would all have the potential to be implemented within a 20-year period, and therefore may increase the potential for cumulative effects.

The land comprising the ROI for this action has a rich and diverse history. It encompasses numerous residential developments, commercial/retail facilities, industrial activities, and recreational opportunities. Although the long list of past projects in the ROI are not listed here, it is generally recognized that past development and land use have contributed to a long-term adverse cumulative impact to vegetation, soils, and water quality as regional growth continues. Mitigation measures may minimize a project's direct or cumulative impacts.

The President's Council on Environmental Quality (CEQ) describes mitigation as:

- Avoidance: Avoid the impact by changing the plan. Do not take certain actions that would cause the environmental effect.
- Minimization: Minimize impacts by changing the intensity, timing, or duration of the action and its implementation.
- Rectifying: Fix, repair, or restore damage that may be caused by implementing the proposed action.
- Reducing: Reduce or eliminate the impact over time.

- Compensation: Compensate for the impact by replacing the damage by improving the environment elsewhere or by providing other substitute resources such as funds to pay for the environmental impact.

Fort Bragg's Installation Natural Resources Management Plan (INRMP) states similar definitions for mitigation. Use of mitigation measures discussed in each resource area below would help minimize any negative effects. Unless otherwise stated, all mitigation listed in the EA is considered "must fund" for the project to continue.

3.1 EXISTING AND FUTURE LAND USE

Fort Bragg is the site of military training, administrative, and residential activities. The LCID and C&D Landfills are located on the east side of Lamont Road, south of McKellar's Road and north of Longstreet Road, Fort Bragg, North Carolina (See Enclosure 1). Fort Bragg is divided into 5 geographic areas, and 94 training areas. Training areas are further subdivided into training compartments, ranges, impact zones, and drop zones. Field training occurs on about 2,316,315 (INRMP, 2001) acres of the installation and adjoining private property. The primary use of the land surrounding the project area is training, although it is just on the edge of the cantonment area. Activities in training areas may include the movement of personnel through wooded and open areas on foot, movement of wheeled vehicles on dirt and gravel roads, and the establishment of bivouac sites. Armor, artillery and mortar firing occurs from established firing points toward controlled impact areas. Other activities related to military training include training in the operation and maintenance of vehicles, academic military training, and physical training. Outlying areas of the military reservation are managed for both silviculture and military training.

Fort Bragg is also divided into watershed management units and habitat management areas. Fort Bragg uses a watershed planning approach to soil conservation. This watershed approach is based on water quality and considers effects that individual site characteristics and restoration techniques may have on ecosystem integrity and/or the training mission within watersheds. Fort Bragg's 62 watershed management units comprise separate and distinct units fro prioritizing soil and water conservation efforts on Fort Bragg (INRMP, 2001). The proposed action is in the watershed of Cypress Creek. The area of Fort Bragg where the landfills are located consists largely of the pine/scrub oak Sandhill plant community (pers.com. Gray, 2004).

3.1.1 ALTERNATIVE I IMPACTS TO LAND USE

This alternative would not change existing land use on the Installation. However, it may have detrimental effects to land use off the Installation because the off-Post landfills would fill quicker with the addition of Fort Bragg's waste, potentially resulting in the conversion of more land into landfill.

3.1.2 ALTERNATIVE II IMPACTS TO LAND USE

Implementing this action would neither adversely affect nor significantly alter land use on Fort Bragg. This alternative would change existing land use only in the area that currently separates the two landfills and in the expansion area. The buffer area has been subject to intensive alteration in the past and is mostly devoid of vegetation. As is the land surrounding it, it is designated for industrial use. The proposed use would be consistent with surrounding land operation.

3.1.3 CUMULATIVE IMPACTS TO LAND USE

The threshold level of significance for impacts on land use would be to alter the existing land use in such a manner as to cause severe incompatibility with adjacent land uses. None of the alternatives would significantly alter land use either currently or cumulatively on the Installation. Minor long-term negative cumulative impacts to regional land use around the Installation are likely to continue regardless of which alternative is chosen, but may be accelerated by the addition of Fort Bragg's waste stream to the current and anticipated waste load at regional facilities.

3.1.4 LAND USE MITIGATION

Neither alternative represents a significant change in land use, and no mitigation would be required as a result of initiation of either alternative.

3.2. VEGETATION AND NATURAL HISTORY

Located in the Sandhills region of the Atlantic Coastal Plain, the climate and related hydrology of Fort Bragg are influenced by proximity to both the Atlantic Ocean and the Piedmont Plateau. The climate of Fort Bragg is characterized by long, hot summers and relatively short, mild winters. The area is sheltered from the severity of winter by the Appalachian Mountains. Average annual precipitation in the area is approximately 47 inches. The major portion of summer precipitation is received in the form of convectional thunderstorms and occasional tropical depressions. Mid-latitude, low-pressure cells preceding cold fronts are the major source of precipitation in the late fall and early spring. The climatic conditions expected for the proposed project site are consistent with those described for Fort Bragg and the Sandhills region of North Carolina by the National Weather Service.

Broad sandy ridges and long, less sandy side slopes, characterize the Sandhills. Many streams have cut deeply into the sediments, creating a much hillier landscape than in the rest of the Coastal Plain. The dominant forest species on Fort Bragg are longleaf pine (*Pinus palustris*) and loblolly pine (*Pinus taeda*). Understory vegetation consists of turkey oak (*Quercus laevis*) on xeric sites, with other oaks on less xeric sites; wiregrass (*Aristida stricta*) dominates the herb layer with

other common species. The plant communities vary little from those found throughout the Atlantic Coastal Plain. The overall poor quality of the soils has, in general, limited the natural vegetation to a longleaf pine-turkey oak-wire grass covering.

The United State Fish and Wildlife Service is concerned about the use of exotic plant species for erosion control, especially persistent species such as the perennials love grass (*Eragrotis curvula*) and Sericea lespedeza or Chinese bush clover (*Lespideza cuneata*). Fort Bragg's 2001 Installation Natural Resources Management Plan (INRMP, 2001) emphasizes the preferential use of native species. The Service encourages the use of only native species and the Soil Erosion Control (SEC) Plan would include information on native vegetation to be planted for soil stabilization. Within six months after final termination of disposal operations at the site or a major part thereof or upon revocation of a permit, the landfill would be revegetated and stabilized with native grasses in accordance with North Carolina Administrative Code. Fort Bragg consulted informally with the United States Fish and Wildlife Service (USFWS) on this proposal on 3 May 2004, and USFWS concurred on 4 June 2004 (Carswell, 2004). This correspondence is included in Appendix E.

3.2.1 ALTERNATIVE I IMPACTS TO VEGETATION

This alternative would not affect vegetation on the Installation as current operations are within already disturbed areas. Upon closure of the landfills, the area would be restored as an open field of grasses and herbaceous cover.

3.2.2 ALTERNATIVE II IMPACTS TO VEGETATION

The proposed action area could be characterized as old-field or grassed areas, grading into pine/scrub oak woodland. However, the existing landfill has impeded upon Stand 9092, a 45-year-old loblolly pine stand, and stand 9081, a 39-year-old longleaf pine stand, would be affected by this project. Approximately 145 loblolly/longleaf pines would be removed for the proposed regrading of the disturbed area, and would be accomplished in conjunction with this project (Carswell, 2004). Operational impacts of the combined landfill would be relevantly consistent with existing impacts, but may increase with increased usage. Upon closure of the landfills, the area would be restored as an open field of grasses and herbaceous cover.

3.2.3 CUMULATIVE IMPACTS TO VEGETATION

The threshold level of significance for vegetation would be the potential to alter vegetation to such an extent that the existing habitat could not be recovered without intervention. Due to the relatively unvegetated state of the area under consideration, no alternative is likely to result in an immediate loss of habitat. There may be negative cumulative impacts to vegetation off the

Installation as a result of the no action alternative if vegetation were removed for construction of additional landfills in the future.

The proposed construction plan for the combination and expansion of the two landfills would include native plant revegetation of the entire site in accordance with North Carolina regulations.

3.2.4 VEGETATION MITIGATION

There would be no adverse impacts to vegetation outside of the expansion footprint. Mitigation plans for impacted pine trees include re-planting access roads to the LCID within stand 9081 and 9082 with longleaf pine (Carswell, 2004). This mitigation plan would re-capture approximately 1 acre and would be planted in FY05.

3.3 SOILS

Soils on Fort Bragg are generally sandy and easily eroded. Organic material can be highly variable depending on the vegetation and proximity to water. Soil conservation is a high priority in any area with insufficient ground cover. Several major soil associations are found in Cumberland County on Fort Bragg. The landfills include the mapped soils described in Table 1.

3.3.1 ALTERNATIVE I IMPACTS TO SOILS

This alternative would not impact soils outside of existing approved plans. Soils off the Installation may be negatively impacted if the increased waste stream from Fort Bragg forces the construction of additional landfills in undisturbed areas elsewhere in the region.

3.3.2 ALTERNATIVE II IMPACTS TO SOILS

Approximately 225,600 CY of soil is anticipated to be displaced by the excavation of the proposed LCID/C&D Landfill. This alternative would change existing plans only in the area that currently separates the two landfills. Implementing this alternative would not adversely affect soil conservation goals.

3.3.3 CUMULATIVE IMPACTS TO SOILS

The threshold level of significance for soils is any ground disturbance or other activities that would violate applicable Federal or state laws and regulations, such as the North Carolina Sedimentation Pollution

Table 1: Major soil associations on within the affected environment

Udorthents, loamy. Consists of areas where the soil has been removed. These borrow pits range in depth from 5 to 20 feet. They were dug for fill material, road base material, clay, or sand. Soil interpretations require onsite investigation. This is the soil type found on the majority of the project area.

Candor sand, 1 to 8 percent slopes (CaB). Consists of somewhat excessively drained soil found in broad areas, and to a lesser extent, on rounded side slopes of uplands. The hazard of erosion is moderate. Available water capacity of these soils is very low. This soil type is found on the northern portion of the project site and on the east and northwest surrounding areas.

Vaucluse loamy sand, 2 to 8 percent slopes (VaB). Consists of well-drained soil on side slopes and narrow ridges of uplands. Permeability is moderately slow in the upper part of the subsoil and slow in the lower part. Available water capacity is low and the hazard of erosion is moderate where the soil is exposed. This soil type is found on the west and southeast sides of the project area.

Vaucluse loamy sand, 8 to 15 percent slopes (VaD). Consists of well-drained soil on side slopes of uplands. These soils are mostly located in woodland areas. Permeability is moderately slow in the upper part of the subsoil and slow in the lower part. The hazard of erosion is severe where the soil is exposed. This soil type is found on the southwest side of the project area.

Gilead loamy sand, 2 to 8 percent slopes (GdB). Consists of moderately well drained soil on the side slopes along streams in uplands. Permeability is moderately slow or slow. A perched water table is commonly above the clayey, brittle subsoil for brief periods during wet seasons. Available water capacity is medium to high and the hazard of erosion is moderate where the soil is exposed. This soil type is found on the south side of the project area.

Control Act (SPCA), and the potential for Notices of Violation (NOV) for the failure to receive applicable state permits, such as a NPDES construction permit, prior to initiating a proposed action.

All land disturbing activities planned in the ROI have the potential to result in the disturbance of soils. There is a long-term adverse cumulative impact to soils as regional growth continues and topsoil is removed; however, use of mitigative measures would help minimize the negative effects.

3.3.4 SOILS MITIGATION

The predominant soil types on Fort Bragg are sandy and easily eroded. The limitations imposed by these soil types make minimizing soil disturbance a top priority to prevent further erosion and stream sedimentation. Best management practices as defined by the NCDENR must be followed to prevent erosion and consequent damage to endangered species habitat or sedimentation of streams and wetland areas. Projects over one acre require a State-approved SEC Plan. All construction, operation, and maintenance activities involving land disturbance must consider and comply with soil conservation measures and the Post's Storm Water Management Permit in their planning and execution. Fort Bragg's soil conservationist reviews all projects for compliance. The project to combine the landfills is more than one acre in size. The State-approved SEC Plan would incorporate measures to control soil erosion.

The SEC Plan generally includes a project description, changes to existing contours, existing drainage patterns, general location of structural best management practices (BMPs), BMP specifications, quantity, cost estimates, BMP inspection and maintenance requirements, detailed preconstruction and during-construction drawings, and a construction schedule. BMPs likely to be included in the SEC Plan would be silt fencing, rock check dams, planting of disturbed areas, and erosion control blankets. Monitoring of these mitigation measures would also be required to further ensure the success of this mitigation.

Improper installation, lack of, and/or poor maintenance of BMPs is the number one cause of failure of erosion and sediment control plans (USEPA). More important for soil loss mitigation, the SEC should include detailed vegetation establishment specifications to ensure the timely installation and establishment of vegetation. Vegetation is important because it controls the rate of soil erosion rather than merely capturing eroded sediment. It is also the most effective BMP with success in the ninety percent range as opposed to half that for some non-structural BMPs such as silt fence (Fifield 2001). All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils.

3.4 WETLANDS AND WATER QUALITY

The Army's water resources management program focuses on compliance with all legally applicable Federal, State and Local laws and regulations regarding the management of all water resources including, wetlands, estuaries, watersheds and groundwater.

Wetlands. In general, the northeastern area of Fort Bragg is an upland area. Soils are sandy and well drained. Wetlands are found along stream bottoms, in the headwaters of small streams, and around lakes. There are numerous hillside drains and seeps throughout the area. These qualify as jurisdictional wetlands as defined by the U.S. Army Corps of Engineers. These hillside drains and seeps are often discontinuous with other wetlands found along streams. The 100 year (Zone A) and transitional 100 to 500 year (Zone B) areas are found along creeks, and streams. Most of the northeast area lies outside the 500-year flood plain (Zone C). Flood zones are shown in the Federal Emergency Management Agency's flood zone maps of Cumberland County. The soil survey of Cumberland and Hoke Counties provides detailed information using 1:24,000 scale orthophotoquads showing the locations of hydric soils associated with wetland terrain. The general locations of rivers, streams, lakes, ponds and major wetland areas are clearly shown in both 1:24,000 and 1:50,000 scale topographic maps of the area. Small streams are located over 1000 feet to the north, south and west of the project site. The nearest wetland area is over 600 feet from the project site.

Groundwater. North Carolina Administrative Code, Title 15A, Subchapter 2L outlines groundwater classification and standards that are relevant to the monitoring that takes place in the vicinity of the landfills. A groundwater monitoring plan for the landfills was originally submitted by KCI Associates, PA (KCI) in April 1999. Current monitoring is in general compliance with this NCDENR approved Water Quality Monitoring Plan at the existing facility. The plan is based on the subsurface and hydrological conditions observed in 1998.

3.4.1 ALTERNATIVE I IMPACTS TO WATER QUALITY

Consistent with the existing groundwater monitoring plan described above, BPA Environmental and Engineering, Inc. conducted sampling at eleven monitoring well locations at the landfills on March 10, 2004. The samples were submitted to a North Carolina certified laboratory and tested for the Federal Appendix I list of volatile organic constituents for detection monitoring and eight RCRA metals (BPA, 2004). Results from the sample analyses show that no Appendix I volatile constituents were detected in concentrations that exceeded the 15A NCAC 2L Standards for Class GA groundwater. However, four RCRA metal constituents were detected in concentrations above the standards (see Table 2). Fort Bragg would initiate consultation with NCDENR regarding additional measures that may need to be taken to demonstrate contaminant migration is contained within the boundaries of the landfill. In general terms, this may require a background study to evaluate the naturally occurring concentrations of heavy metals. If there were significant deviations

between the determined background levels and the levels from the March 2004 samples, a corrective measure plan would be developed. Fort Bragg would ensure that no wells or other groundwater sources are in the path of contaminant migration. However, at this point no rigorous statistical comparison to background samples has been completed, nor is it currently required.

TABLE 2	Sample No.									15A NCAC 2L	Practical Quantitation
Compound	MW-3	MW-4	MW-5	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	Standards	Limit (PQL)
Arsenic, Total	BQL	BQL	0.06	BQL	BQL	0.025	0.02	BQL	BQL	0.010	0.01
Barium, Total	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	2.0	0.5
Cadmium, Total	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.005	0.001
Chromium, Total	BQL	0.12	0.084	BQL	0.019	0.036	0.04	BQL	BQL	0.05	0.01
Lead, Total	BQL	0.025	0.052	BQL	0.013	0.13	0.05	0.02	0.04	0.015	0.01
Mercury, Total	BQL	BQL	BQL	0.001	BQL	BQL	BQL	BQL	BQL	0.0011	0.0005
Selenium, Total	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.05	0.02
Silver, Total	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	0.018	0.01

NOTES:

Table courtesy of BPA Environmental and Engineering, Inc.

- All results in parts per million (ppm)
- BQL - Below practical quantitation limit
- Shaded blocks denote concentrations that exceed 15A NCAC 2L Standards
- Some results have been omitted if they were within normal range

3.4.2 ALTERNATIVE II IMPACTS TO WATER QUALITY

The proposed action requires a water quality monitoring plan that describes the collection and evaluation of groundwater monitoring samples collected from compliance wells installed in the uppermost aquifer within the proposed LCID and C&D Landfill. A plan was prepared by HDR Engineering in December 2003 and is in accordance with the rules codified under North Carolina Solid Waste Management Rules 15A NCAC 13B and proposed Section .0544 under the guidance of a North Carolina Licensed Engineer and would be submitted with the Construction Permit Application for the proposed action to NCDENR. The proposed water monitoring system would include a total of thirteen wells. Six new wells were recently installed along the perimeter of the existing and proposed waste boundaries of the facility in anticipation of the expansion. During the development of the expansion area, it is anticipated that four monitoring wells (MW-5, MW-11, MW-12, and MW-13) would need to be abandoned (See Appendix D for map of well locations).

The water quality monitoring plan presented in the application permit for the proposed action is intended to provide detection monitoring throughout the active life and post closure care

period for the combined landfill. Data would be collected twice a year and analyzed for the constituents listed in 40 CFR Part 258 Appendix I (Volatile Organic Compounds), the minimum parameters listed in 15A NCAC 13B proposed Section .0544 D.i.II, and the eight RCRA metals using approved EPA methods (HDR, 2004). A report would be prepared that summarizes the sampling events and analytical results. Operational impacts of the proposed action would be relevantly consistent with existing impacts, but may increase with increased use of the landfill.

3.4.3 CUMULATIVE IMPACTS TO WATER QUALITY

The ROI for water quality consists of the streams and other surface water bodies within the local watershed. Fort Bragg uses a watershed planning and management approach to soil conservation. The project area is in the Cypress Creek watershed that encompasses approximately 2,100 acres and is part of the larger, northern Fort Bragg Little River watershed. The Little River watershed is listed in the INRMP as part of an ongoing program to mitigate erosion and resolve turbidity problems; this program resulted from an agreement between Fort Bragg and the State of North Carolina after Fort Bragg received several NOVs for exceeding water quality standards for turbidity in 1989.

Both alternatives would require a strict schedule of ground water quality monitoring, although the combined landfill would operate under the proposed regulations even before they are final. There are no negative cumulative impacts to water quality relative to current conditions.

3.4.4 WATER QUALITY MITIGATION

Adherence to applicable Federal and state laws and regulations and Installation policies and guidelines is required and will minimize impacts generally. All construction activities greater than one acre in size and/or as part of a common development area, such as this proposed action, require an Erosion and Sedimentation Control Permit from NCDENR. A Notice of Intent (NOI) will be submitted to the NCDENR. Erosion control BMPs would be utilized to minimize the deposition of sediments into adjacent surface waters at the site of disturbance. A variety of methods will be used for erosion and sediment controls such as mulching, silt fences, rock check dams, straw bales, drainage swales, sedimentation basins, etc.

A Spill Prevention, Control and Countermeasure (SPCC) Plan and erosion control BMPs also will be implemented to avoid impacts to desirable habitat during construction. The preparation and implementation of a SPCC Plan and/or its requirements during construction activities would prevent and/or minimize spill/release from hazardous materials into waterways. The SPCC is just one aspect of the Environmental Protection Plan (EPP) prepared by the contractor that would be required for construction to commence. The EPP should address specifically the implementation of

discharge from control areas for equipment maintenance or repair, waste locations, wash-down locations, and sanitary facility areas.

3.5 WILDLIFE INCLUDING PROTECTED SPECIES

Management of wildlife and wildlife habitat complies with the provisions of the Endangered Species Management Plan (ESMP), and the Integrated Natural Resources Management Plan (INRMP), which are incorporated herein by reference.

The plant and animal species of Fort Bragg have adapted to survive fire and are dependent upon it to maintain the conditions necessary for their survival. The Nature Conservancy inventory identified 33 natural communities and variants on Fort Bragg representing a broad array of topographic, climatic and hydrologic interactions. Other inventories have identified 100 avian, 67 mammalian, and 58 reptilian and amphibian species on Fort Bragg. Large game includes black bear (*Ursus americanus*), eastern wild turkey (*Meleagris gallopavo silvestris*), and white-tailed deer (*Odocoileus virginianus*). Other species include beaver (*Castor canadensis*), opossum (*Didelphis virginianus*), bobcat (*Lynx rufus*), muskrat (*Ondatra zibethica*), raccoon (*Procyon lotor*), and eastern fox squirrel (*Sciruus niger*). Among upland game birds the common bobwhite quail (*Colinus virginianus*) is found. Migratory game birds include the wood duck (*Aix spousa*) and the mourning dove (*Zenaida macroura*). Streams and ponds include inland game fish such as the chain pickerel (*Esox niger*), black bass (*Micropterus salmoides*), redbreast sunfish (*Lepomis auritus*), bluegill (Lepomis machrochirus), redear sunfish (Lepomis microlophus), and the channel catfish (*Ictalurus punctatus*). In general, wildlife should not be killed, captured, harassed, nor should dens, nests, or eggs be disturbed. Poisonous snakes should not be killed indiscriminately but may be killed if a life-threatening situation provides no reasonable alternative. Wildlife that is found injured or orphaned should be reported to Natural Resources personnel. Release of non-native wildlife such as boa constrictors, tropical fish, feral swine, ferrets, and other animals is prohibited.

The RCW is the most prominent federally endangered species on the Installation. The RCW was placed on the Federal list of endangered species in 1970. The RCW is known to coexist with humans and their activities and through proper management, this species is compatible with most of the Installation's training, operations, and maintenance activities. RCWs have a social structure that involves a breeding pair and helpers that assist with various activities; this compilation of individuals is referred to as a cluster. The Installation contains over 300 active and primary recruitment clusters covering approximately 12,500 acres, as well as 81 supplemental recruitment clusters as part of the Post's share of the regional recovery goal (INRMP, 2001). Discrete cluster sites are typically located where mature long-leaf pine trees are more than 60 years old. Foraging habitat is more variable with timber increasing in value as the stands age past 30 years. Both nesting and foraging habitat is characterized as open stands of pine with a scarce to moderate midstory.

All endangered species sites on Fort Bragg have been precisely located using the Global Positioning System (GPS). The boundaries of endangered plant sites are permanently marked with yellow diamond-shaped signs warning "ENDANGERED PLANT SITE - OFF LIMITS - NO MILITARY ACTIVITY - FB REG 350-6". Aluminum tags with identifying numbers and two broad white bands currently mark all Red-cockaded woodpecker (RCW) cavity trees. The 200-foot buffer zones surrounding the RCW clusters on Fort Bragg are marked with signs warning, "ENDANGERED SPECIES SITE - DO NOT DISTURB - RESTRICTED ACTIVITY - RED-COCKADED WOODPECKER - FB REG 350-6". The project site is located within two RCW forage partitions for clusters 429 and 395. The closest RCW cluster is located over 600 feet east of the project site. Cluster 395 is an inactive primary recruitment cluster and cluster 429 is a recently active supplemental recruitment cluster. There are no other endangered species located on the project site.

Army installations must be sensitive to those species listed as endangered or threatened under State law, but not federally listed (AR 200-3). State listed species are not protected under the Endangered Species Act (ESA); however, whenever feasible, installations cooperate with State authorities in efforts to conserve these species and identify State listed species in the Installation's INRMP. For example, State listed species are identified and addressed in the Fort Bragg INRMP.

3.5.1 ALTERNATIVE I IMPACTS TO WILDLIFE

This alternative would not affect wildlife relative to current conditions. Continuing this alternative would not have significant adverse impacts upon threatened or endangered species on the Installation. This alternative may have negative effects on wildlife off the Installation as the diversion of waste to regional landfills may supplement the need for North Carolina to initiate construction of additional landfills, potentially reducing wildlife habitat.

3.5.2 ALTERNATIVE II IMPACTS TO WILDLIFE

There would be minimal impact to wildlife or any federally threatened or endangered species as a result of construction. Informal consultation with USFWS was initiated because the activities of the preferred alternative would take place within RCW forage partitions. Fort Bragg consulted informally with the United States Fish and Wildlife Service (USFWS) on 3 May 2004, and USFWS on 4 June 2004 (Carswell, 2004). That consultation is documented in Appendix E. Operational impacts should be relevantly consistent with existing impacts, but may increase with increased usage.

3.5.3 CUMULATIVE IMPACTS TO WILDLIFE

Neither alternative would likely incur a significant change in the status of protected species. Cumulatively, effects on protected species must be mitigated on a case-by-case basis and therefore, cumulative effects should not be considered in this context.

3.5.4 WILDLIFE MITIGATION

The preferred alternative would require mitigation for effects to wildlife or threatened and endangered species in the form of vegetation mitigation (Section 3.2.4) described above.

3.6 CULTURAL RESOURCES

Fort Bragg manages cultural resources through its Cultural Resources Program in accordance with the Fort Bragg Integrated Cultural Resources Management Plan (ICRMP), completed in 2001, and relevant federal legislation such as the National Historic Preservation Act (NHPA), Archeological Resources Protection Act (ARPA), and the Native American Graves Protection and Restoration Act (NAGPRA) as well as Army Regulation 200-4, Historic Preservation. Fort Bragg currently manages a total of over 2,800 archeological sites, two historic districts, six historic structures, and 27 historic cemeteries. Both historic districts, five buildings, and approximately 200 archeological sites are considered eligible for listing on the National Register of Historic Places (NRHP). One historic structure, the antebellum period, Long Street Presbyterian Church, is listed on the NRHP. The project site is not historic, nor is it located within a historic district or within the view shed of either the Old Post or the Overhills Historic Districts.

Consultation with Stacy Culpepper from Fort Bragg's Cultural Resources Program indicated that this area of the Installation is considered highly disturbed and the likelihood of finding intact archaeological resources is slim because past ground disturbance and cultural resources surveys have not indicated the presence of resources in the area (Culpepper, 2003).

3.6.1 ALTERNATIVE I IMPACTS TO CULTURAL RESOURCES

This alternative would not affect cultural resources on the Installation.

3.6.2 ALTERNATIVE II IMPACTS TO CULTURAL RESOURCES

Implementing this action would not adversely affect cultural resources on Fort Bragg because the landfill is not historically significant.

3.6.3 CUMULATIVE IMPACTS TO CULTURAL RESOURCES

The threshold level of significance to determine impacts to cultural resources is the potential to violate Federal and State laws and regulations and Installation policies and guidelines, such as NAGPRA, ARPA, NHPA, and (Installation) Best Management Practices. Neither alternative would

incur a significant change in the status of cultural resources on Fort Bragg since both alternatives involve land that is already highly disturbed. Construction of a new landfill off the Installation may have effects on cultural resources, but those impacts cannot be accurately assessed at this time.

3.6.4 CULTURAL RESOURCES MITIGATION

No mitigation for cultural resources would be required. The Army has an established protocol for inadvertent discovery of archaeological resources during construction projects.

The following protective measures would be taken upon discovery of sites:

- Cease ground disturbing activities immediately and report to the Cultural Resources Manager (Jeff Irwin, 396-6680) upon discovery of potential cultural deposits.
- Do no further investigation if remains are determined by the CRM to be natural, and resume the project. Protect the site until such time that it is determined ineligible for the NRHP if remains are determined to be cultural.

3.7 HUMAN ENVIRONMENT

Several factors relating to human environment normally considered during the NEPA process were determined to have no significance on the implementation of the proposed action. These factors are population, transportation, utilities, and additional information regarding the urban area around Fort Bragg. The location of the two feasible alternatives is located in the interior of the installation where its effects would be limited to this area.

The Fort Bragg area has experienced substantial growth over the past two decades. Further population growth is expected, largely due to the presence of Fort Bragg. The installation's substantial contribution to the local economy encourages economic activity and expansion in areas near the post. The availability of military benefits such as health services, the commissary and Post Exchange draws military retirees to the area, adding to the need for expansion and development in the surrounding civilian community. Urban encroachment forces Fort Bragg to carefully consider how its operations affect the surrounding area and, just as importantly, how land use around the installation affects Fort Bragg.

In Cumberland County most land bordering Fort Bragg is already developed for residential use. In Hoke County, south of the installation boundary, development is not as wide spread, but is growing. Moore County, the home of Southern Pines and Pinehurst, an area undergoing substantial growth, is located to the west of the installation. The Woodlake subdivision, near the northern boundary of the installation, is substantially developed. Harnett County currently has no zoning laws in place for the southern portion of the county allowing mobile homes to constitute a

substantial, and growing percentage of residential land use near Fort Bragg. This is a problem due in part to the noise impact from operations at Fort Bragg and Pope Air Force Base. Mobile homes offer less noise attenuation in comparison to other types of dwellings. Accordingly land use incompatibility issues could arise in Harnett County and other areas where mobile housing is found near the installation.

Environmental Justice. The concept of environmental justice is based on the premise that no segment of the population should bear a disproportionate share of adverse human health or environmental effects. To address these concerns, Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations* was issued. It requires each federal agency to "make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health and environmental effects on minority and low-income populations." There are no low income or minority populations living in areas surrounding the project area that meet the definition of EO 12898; there are no mobile homes or substandard housing located in these areas.

Protection of Children. The concept of protecting children arises out of a growing body of scientific knowledge that demonstrates that children may suffer disproportionately from environmental health and safety risks. To address these concerns, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* was issued on April 21, 1997. It requires federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children and to ensure that its policies, programs, activities, and standards address disproportionate risk to children that result from environmental health or safety risks. The EO defines environmental health and safety risks as risks to health or to safety that are attributable to products or substances that children are likely to come in contact with or ingest [(such as the air they breathe, the food they eat, the water they drink or use for recreation, the soil on which they live and play, and the products that they use or to which they are exposed). There are no children living in areas surrounding the project area that meet the definition in EO 13045; there are no mobile homes or substandard housing located in these areas.

Public Health and Safety. Training continues to require the use of "blank" as well as "live" ammunition. The range of ammunition used for training purposes is very broad. Blank ammunition and various pyrotechnic simulators are used throughout the entire training area. Live-fire training is conducted in designated ranges and training areas, with projectiles directed toward designated impact areas.

Fort Bragg's military, civilian personnel, and the community are routinely advised and reminded not to handle any suspected unexploded ordnance (UXO), and to report their location to the Explosive Ordnance Demolition Detachment or to the Director of Public Safety via 911 call. No UXO is evident on the property. This land is not used for training; therefore, the Army does not expect to encounter any problems from this source.

3.7.1 ALTERNATIVE I IMPACTS TO HUMAN ENVIRONMENT

Continuing this alternative would not cause disproportionately high and adverse human health, economic or environmental effects upon minority populations and low-income populations within the meaning of EO 12898. Continuing this action would not cause significant environmental health and safety risks, thus, there would be no action that would disproportionately affect children, within the meaning of EO 13045. No civilians live in the vicinity of the project site.

3.7.2 ALTERNATIVE II IMPACTS TO HUMAN ENVIRONMENT

Implementing this action would cause no adverse human health, economic or environmental effects upon minority populations and low-income populations within the meaning of EO 12898 because there are no minority populations in the vicinity of the project site. Implementing this alternative would not cause significant environmental health and safety risks, thus, there would be no action that may disproportionately affect children, within the meaning of EO 13045.

3.7.3 CUMULATIVE IMPACTS TO HUMAN ENVIRONMENT

The project would combine the C&D and LCID landfills, maintaining the existing character of the site in the long term. In the near term, there are no similar projects nearby. Taken together the cumulative effects of this project are too small to be significant. Therefore, they would not significantly affect the quality of the human environment. The construction and operation of the combined landfill would be in accordance with all applicable environmental regulations.

The no action alternative may require the shipment of LCID waste to facilities off the Installation. North Carolina has limited storage capability for waste, it is estimated the state has 16 years of landfill capacity (North Carolina, 2003). However, much of the state's capacity is not widely available due to permit conditions, franchise arrangements, political decisions, and distance (North Carolina, 2003). The addition of Fort Bragg's waste to the stream may hasten the need for a new landfill, although a study would need to be conducted to accurately assess the impacts of this action. The effects to the human environment resulting from such action would be difficult to determine without preliminary plans.

3.8 AIR QUALITY

Fort Bragg manages its air resources in compliance with its Title V Air Quality Permit. The Fayetteville-Fort Bragg area is an air quality attainment zone for all pollutants. National Ambient Air Quality Standards (NAAQS) for ozone have been exceeded during several recent summers. Increased ozone levels at near ground level are taken as an indicator of poor air quality. Because

this is a perennial problem, North Carolina is developing a State Implementation Plan (SIP) to govern compliance with the NAAQS standards for ozone in Cumberland County.

Sources of potential air emissions at the Installation include particulate matter (PM) from dust, carbon monoxide and PM from prescribed burning activities, and nitrous oxides from the combustion of fuels. Fugitive Dust is particulate emissions released from sources that do not have a pinpoint exit such as a stack or vent. Relief from regulation of fugitive dust is available during military training and exercises, but not for activities such as construction.

The threshold level of significance for Air Quality is the violation of applicable Federal or state laws and regulations, such as the Clean Air Act, and the potential for NOVs for the failure to receive applicable state permits (such as those required for construction projects) prior to initiating a proposed action or the failure to follow permit requirements.

3.8.1 ALTERNATIVE I IMPACTS TO AIR QUALITY

Continuing this alternative would not adversely affect air quality because the existing landfill would continue to be used. Therefore, no construction activity would take place to generate air pollutants. This alternative would not affect air quality relative to current conditions.

3.8.2 ALTERNATIVE II IMPACTS TO AIR QUALITY

Implementing this action would not adversely affect air quality on Fort Bragg. Engine exhaust and dust from vehicles and construction equipment would be transitory and limited to the immediate vicinity of the landfill during the proposed action.

3.8.3 CUMULATIVE IMPACTS TO AIR QUALITY

By regulation, both alternatives will maintain air quality to ensure that the Landfill/s does not violate any applicable requirements developed under the SIP approved or promulgated by the United States Environmental Protection Agency Administrator pursuant to Section 110 of the Clean Air Act. Open burning of solid waste would be prohibited at the Landfill. Any infrequent burning must be approved by NCDENR.

3.8.4 AIR QUALITY MITIGATION

Some methods in which air quality can be improved are listed below:

- All persons responsible for any operation, process, handling, transportation, or storage facility that may result in fugitive dust, shall take all reasonable precautions to prevent such dust from becoming airborne.

- Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operation, the grading of roads or the clearing of land;
- Application of asphalt, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces that gives rise to airborne dusts;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty material. Adequate containment methods can be employed during sandblasting or other similar operation;
- Covering at all times when in motion, open bodied trucks, transporting materials likely to give rise to airborne dusts;
- The prompt removal of earth or other material from paved streets onto which earth or other material has been deposited.

3.9 NOISE

Fort Bragg is a fully operational military installation with the mission of training soldiers for war. Environmental noise produced by normal daily operations is assessed under the Environmental Noise Management Program (ENMP) and Air Installation ENMP programs. Zones of ambient noise are identified by predictive modeling and field checked with noise monitors. Land use planners use this information to guide land development both on and off post.

The day-night level (DNL) is the primary description used to assess relative noise levels. This represents a weighted sound level over a 24-hour period, with a 10-decibel penalty added for nighttime noise levels. The DNL is accepted as the unit for use in quantifying human annoyance to general environmental noise. Noise from transportation and continuous sources is assessed using the A-weighted DNL. Noise for impulsive sources such as that resulting from artillery or demolition activities is assessed using the C-weighted DNL. The percentages of the population annoyed by various noise levels, decibel parameters for A-weighted (dBA) and C-weighted (dBC) noise, and guidance for noise sensitive land uses are listed below:

ZONE	POPULATION ANNOYANCE	DECIBEL RANGE dBA	dBC	LAND USE GUIDANCE
I	<15%	<65	<62	Acceptable
II	15-39%	65-75	62-70	Normally Unacceptable
III	>39%	>75	>70	Unacceptable

For purposes of this EA, the A-weighted DNL is most significant for evaluating the effects of the Proposed Action. The area near the landfills is classed as Zone I, an area considered to be acceptable for noise sensitive land uses.

3.9.1 ALTERNATIVE I IMPACTS TO NOISE

Continuing this alternative would not adversely affect noise because the existing landfills would continue to operate under current circumstances.

3.9.2 ALTERNATIVE II IMPACTS TO NOISE

Implementing this action would not adversely affect ambient noise levels. There would be a slight increase in noise at the site due to the increased use of construction equipment.

3.9.3 CUMULATIVE IMPACTS TO NOISE

Neither alternative will alter the current noise status of this area.

3.9.4 NOISE MITIGATION

No mitigation would be required as a result of either alternative.

3.10 HAZARDOUS AND TOXIC MATERIALS/WASTE

Hazardous and Toxic Materials/Waste Management programs on Fort Bragg have three major functions: (1) storage, handling, and disposal; (2) waste minimization; and (3) remediation. The objectives for hazardous and toxic material and waste management programs are to ensure compliance with all applicable laws and regulations, eliminate, minimize, and remediate hazards to human health and damage to the natural environment, and to save money by implementing waste management procedures that conserve resources in such a way as to protect public health and safety. A detailed discussion of these programs is presented in the Installation Sustainable Integrated Solid Waste Management Plan (September, 2003).

The project site is, and would remain, a hazardous materials mixing and storage site. Should any hazardous substance spill occur during construction, the Army would handle the spill under Fort Bragg's Spill Contingency Plan and Spill Prevention, Control, and Countermeasure Plan. The relative potential for an environmental hazard on a parcel of land is categorized as Category I (non-hazardous), II (potentially contaminated) or III (contaminated). The project site is and would remain a Category III (contaminated) site. Hazardous materials would continue to be disposed of in the combined landfill.

Uncontaminated demolition debris would be disposed of in a permitted construction and demolition debris landfill located on Fort Bragg. Ordinary trash would be collected in dumpsters on site, emptied at the Fort Bragg transfer station and trucked out to a permitted regional landfill. Appendix C clarifies the destination of various wastes produced by Fort Bragg.

3.2.11 SOLID WASTE & RECYCLING

With the large amount of construction, demolition, and renovation taking place at Fort Bragg, a tremendous amount of solid waste is generated. Spurred by the *Sustainable Fort Bragg* movement initiated in 1999, "Green" thinking has generated new uses for hundreds of tons of material that otherwise would have been buried in the landfill, and an astounding 56 percent of the solid waste produced on Fort Bragg was recycled in FY02. For example, over 132,000 tons of concrete from demolition projects was ground up and found new life in roadbeds, trail bases, and range refurbishing projects. Approximately 140,000 tons of excavated earth was also diverted to range erosion projects and trees removed because of construction were converted into more than 4,800 tons of mulch (Pfau, 2003).

Recycling reduces disposal cost, conserves natural resources and minimizes environmental problems associated with land disposal. Fort Bragg's policy on recycling is governed by the Fort Bragg Integrated Strategic Military Plan released in May 2003. Fort Bragg is in the process of evaluating sustainable practices for the facility and has set a goal of zero landfill waste by 2025.

4.0 CONCLUSIONS & RECOMMENDATIONS

4.1 CONCLUSION

Alternative I, "No Action/Status Quo," would have no effect to resources due to the fact that Fort Bragg would be following already-established procedures. Cumulatively, Alternative I would result in minimal positive effects on regional land use because of the scarcity of space in landfills and minimal adverse effects on groundwater and vegetation.

Alternative II, "Landfill Combination and Expansion" would have localized negative effects on soils and hazardous waste, and would have minor positive effects on regional land use due to the fact that it would delay the need for transport of refuse off of Fort Bragg. Continued efforts to reduce waste produced on the Installation would reduce the amount of waste leaving the Installation at such time the LCID/C&D Landfill reaches its capacity. The localized negative effect on soils would be partially mitigated through installing structural erosion and sediment controls to protect adjacent wetlands both during and after construction. The effects of tree removal would be mitigated through the planting of trees in roadways in adjacent habitat. Further mitigation can be accomplished through native plant reclamation, increased water quality monitoring, seeding and other erosion control measures. Cumulatively, Alternative II would result in minimal negative effects to soils.

4.2 RECOMMENDATION

Alternative II, "Landfill Combination and Expansion," is the recommended course of action because it involves no significant change in land use and enables fulfillment of missions on Fort Bragg. The financial benefit to the installation of revamping an existing facility as opposed to constructing a new facility that would require new roads, utility lines, etc., is substantial. Based on a review of the information presented in this EA under consultation with cultural resources, environmental compliance, soil conservation, natural resources, wildlife, and training managers at Fort Bragg, the project to combine the C&D and LCID landfills on Fort Bragg in Cumberland County, North Carolina, would not constitute a major federal action significantly affecting the quality of the human environment within the meaning of Section 102(2)(c) of the NEPA. Accordingly, preparation of an Environmental Impact Statement is not required. Recommend publication of a draft Finding of No Significant Impact (FNSI) be released to announce this conclusion to the public, and afford them an opportunity to comment prior to a final decision on the Proposed Action. All plans and specifications prepared by the design firm for this project should incorporate all environmental permits, compliance, mitigation, and monitoring, Phase I archaeological surveys, and sustainable design as detailed in this document.

In order to mitigate the potential for adverse environmental impacts at the project site, Fort Bragg would conduct construction and operation of the combined landfill in compliance with all

applicable construction standards and environmental regulations. Stringent attention would be paid to soil erosion control in order to prevent sedimentation of downstream waters. A State approved Soil Erosion Control Plan would be required. Additional mitigation in the form of tree planting is also required to offset the effects of required vegetation destruction.

5.0 PREPARATION, CONSULTATION AND REFERENCES

5.1 PREPARATION AND REVIEW

5.1.1 PREPARED BY:

ECW Environmental Group, Hampton, Virginia:

Cristen L. Taylor, Environmental Resource Specialist

Amy L. Sands, Environmental Analyst

John A. Esson, Senior NEPA Consultant

5.1.2 REVIEWED BY:

Fort Bragg Environmental Sustainment Division:

5.2 PERSONS & AGENCIES CONSULTED

5.2.1 AGENCIES

Headquarters, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC

Office of the Staff Judge Advocate. Public Works Business Center. Readiness Business Center.

N.C. Department of Cultural Resources
State Historic Preservation Office

N.C. Department of Environment and Natural Resources

5.2.2 PERSONS

Aycock, A., Colonel, U.S. Army, Garrison Commander, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Bean, G.G., Colonel, U.S. Army, Director of Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Carswell, V.L., Natural Resources Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Combs, C.P., Senior Code Enforcement Administrator (Zoning), City of Fayetteville Inspections Department, Fayetteville, North Carolina.

Cook, T.D., Lieutenant Colonel, U.S. Army, Acting Staff Judge Advocate, Headquarters, XVIII Airborne Corps, Fort Bragg, NC.

Culpepper, W.S., Archaeologist/GIS Analyst, Cultural Resources Branch, Environmental Sustainment Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Davis, A.D., IV, Colonel, U.S. Army, former Garrison Commander, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Gray, J.B., Botanist, Endangered Species Branch, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Heins, D.A., Chief, Environmental Sustainment Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Hoffman, E.L., Wildlife Biologist, Environmental Sustainment Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Hull, C.G., Long-term Sustainability Planner, Environmental Compliance Branch, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Irwin, J.D., Archaeologist, Environmental Sustainment Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Lantz, J.C., Soil Conservationist, Environmental Sustainment Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

Pfau, L.S., Sustainability and the U.S. Army, Fort Bragg's Remarkable Efforts, www.rmi.org/sitepages/pid1055.php , 2003.

Sands, A.L., Environmental Analyst, ECW Environmental Group, LLC, Environmental Sustainment Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, NC.

Scarlett, W., BPA Environmental & Engineering, Inc., Greensboro, NC.

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Williams, W.H., Captain, U.S. Army, Office of the Staff Judge Advocate, Headquarters, XVIII Airborne Corps, Fort Bragg, NC.

Williamson, S.D., Solid Waste/Recycling Manager, Environmental Sustainment Division, Public Works Business Center, Fort Bragg Garrison Command (Airborne), Installation Management Agency, Fort Bragg, NC.

6.0 LITERATURE

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ACRONYMS AND ABBREVIATIONS

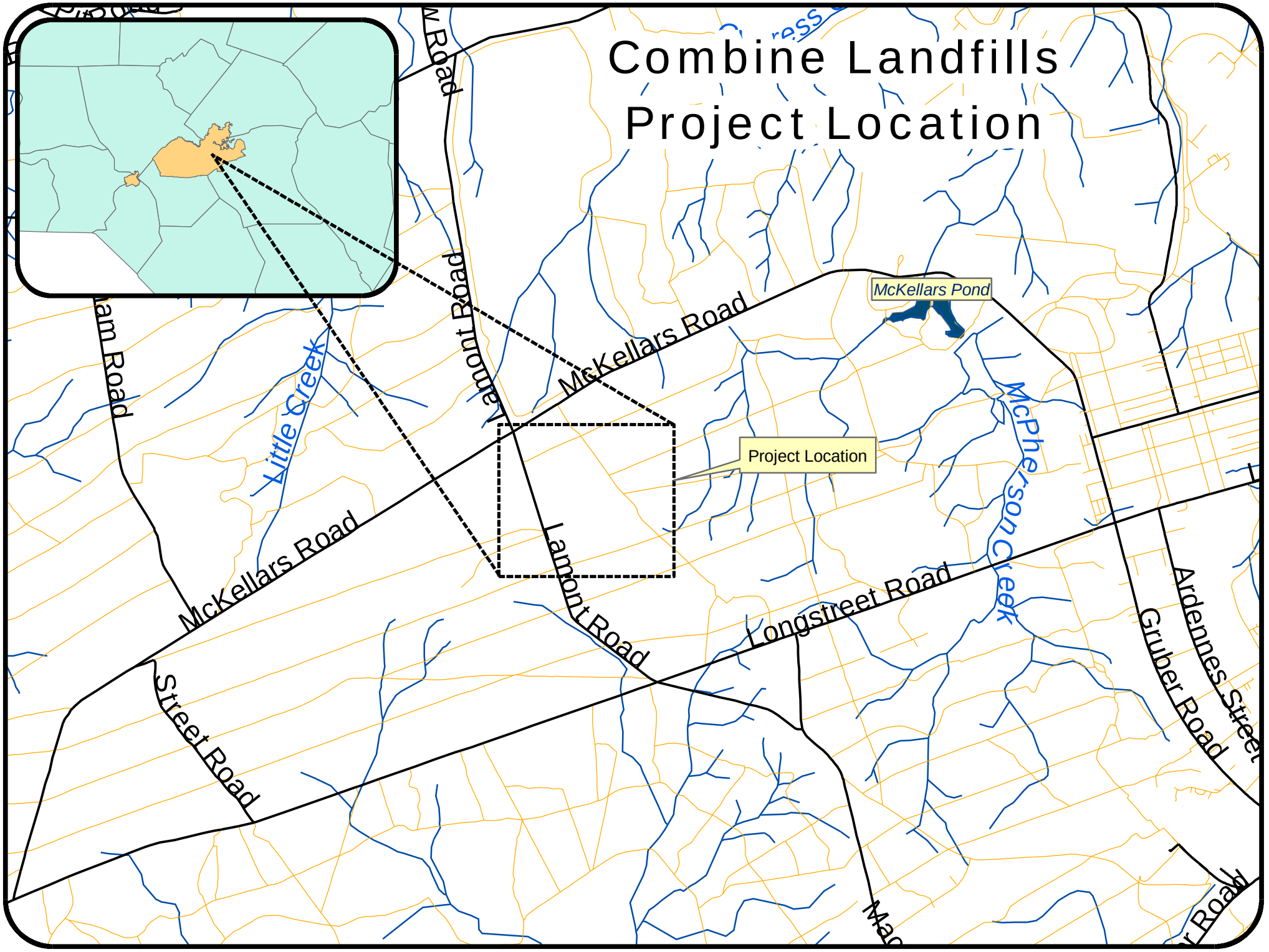
ADNL	A-Weighted Day Night Level
AR	Army Regulation
ARPA	Archeological Resources Protection Act
CDNL	C-Weighted Day Night Level
CY	Cubic Yards
dBA	A-Weighted Decibels
dBC	C-Weighted Decibels
DNL	Day-Night Level
EA	Environmental Assessment
EO	Executive Order
FB REG	Fort Bragg Regulation
FNSI	Finding of No Significant Impact
GPS	Global Positioning System
ICRMP	Integrated Cultural Resources Management Plan
ICUZ	Installation Compatible Use Zone
INRMP	Installation Natural Resources Plan
JT	Johnston loam
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Restoration Act
NCDENR	North Carolina Department of Environment and Natural Resources
NHPA	National Historic Preservation Act
PWBC	Public Works Business Center
RCRA	Resource Conservation and Recovery Act
RCW	Red-Cockaded Woodpecker
ROI	Region of Influence
SIP	State Implementation Plan
TNC	The Nature Conservancy
UXO	Unexploded Ordnance

APPENDICES

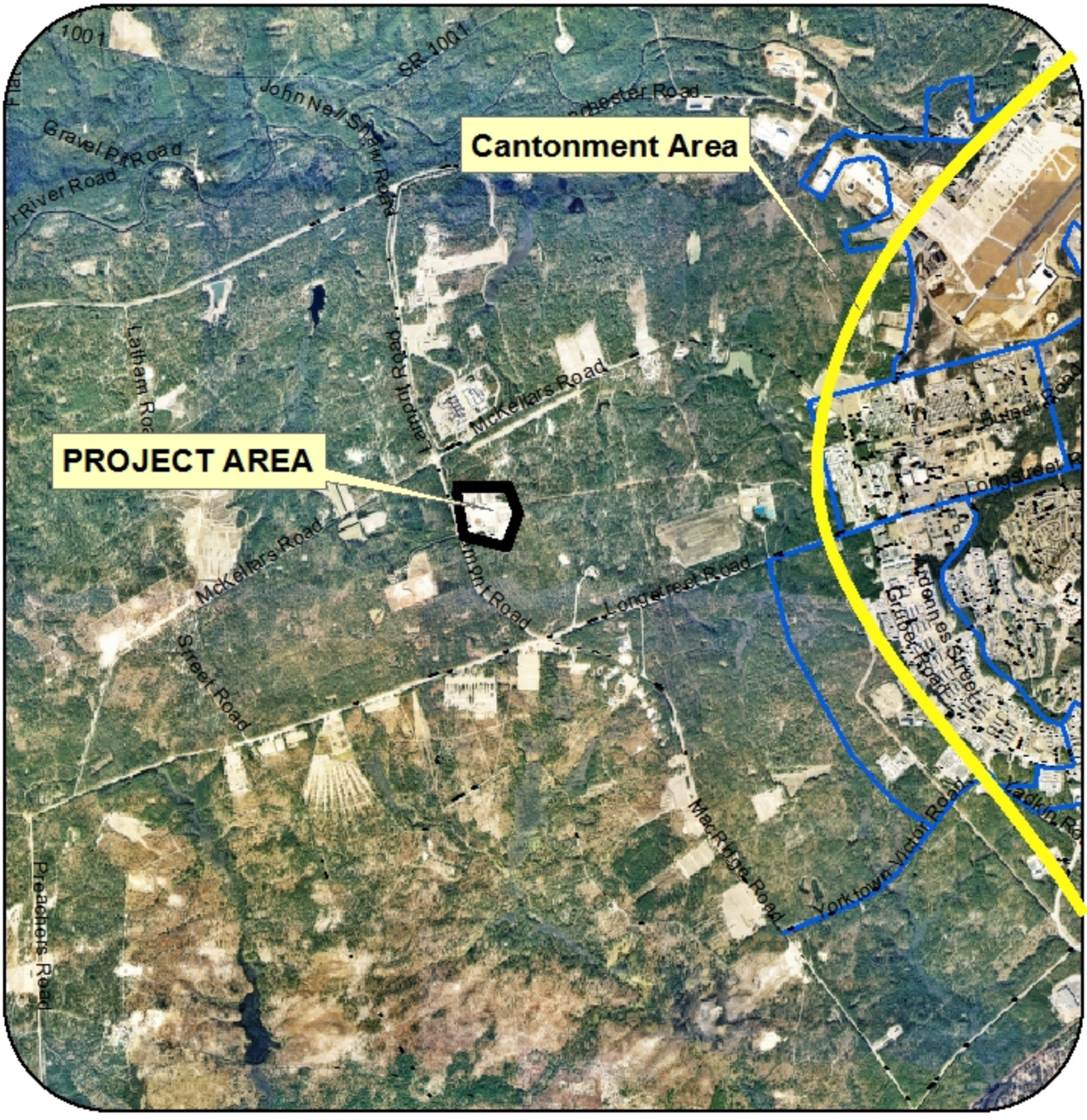
A – AREA MAPS
B – LANDFILL PHOTOS
C - LANDFILL DISPOSAL INSTRUCTIONS
D – MAP OF GROUNDWATER MONITORING WELL LOCATIONS
E – Rcw forage partition
f -- informal consultation

APPENDIX A

AREA MAPS


Combine Landfills
Project Location
McKellars Pond
McKellars Road
Project Location
Little Creek
McPherson Creek
Lamont Road
Longstreet Road
Gruber Road
Ardennes Street
Street Road

LCID And C&D Landfill Expansion



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Feet

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PN: FW00051-2P
Source: M:/Arc/masterCantonment.mxd
Coordinate System: NAD 1983 UTM Zone 17N
Prepared By: Cristen Taylor

APPENDIX B

PHOTOS OF EXISTING LANDFILLS

Figure 1: View towards existing land clearing and inert debris landfill

Figure 2: Existing construction and demolition landfill

Figure 3: Buffer area between existing landfills

APPENDIX C

LANDFILL DISPOSAL INSTRUCTIONS

LANDFILL DISPOSAL INSTRUCTIONS

1. Fort Bragg has three Non-Hazardous Solid Waste Disposal Sites, which are permitted by the North Carolina Department of Environment and Natural Resources (NCDENR). They are located off Lamont Road, west of Fort Bragg's cantonment area, between Longstreet and McKellar Roads. Two of the Solid Waste Sites are permitted landfills with accepts waste from Fort Bragg and Pope Air Force Base. These landfills are for Construction and Demolition Debris (C&D) and Land Clearing and Inert Debris (LCID). The other permitted site is the Municipal Solid Waste (MSW) Transfer Station for the transferring the MSW off Fort Bragg to an approved and permitted landfill.

2. The C&D Landfill is permitted to receive construction and demolition debris and asbestos generated on Fort Bragg. This includes non-hazardous waste normally generated at a construction site such as painted and treated wood, incidental scrap metals, treated wood, packaging, insulation, shingles, empty metal cans, and wall board. Asbestos is disposed in a designated cell within the C&D landfill by the landfill operator. The asbestos waste shall be properly bagged or contained and with manifest documents before acceptance for the waste before placing into the C&D Landfill. Yard Waste is not allowed in the C&D Landfill.

3. The Land Clearing and Inert Debris (LCID) Landfill is next to the C&D Landfill and is permitted to accept yard waste, trees cut in manageable lengths (6'), stumps, limbs (6' lengths), un-painted and non-treated wood, dirt cleared from land clearing with asphalt, bricks, and concrete.

4. The Waste Transfer Station (WTS) accepts MSW which includes garbage, paper, plastic and household waste from support activities, troop barracks and motor pools and Fort Bragg's family housing. The MSW is prepared for shipment and is transported to an approved and permitted landfill off Fort Bragg.

5. Concrete and Asphalt should not be mixed with debris and shall be stockpiled at the designated recycling site at the landfill.

6. Tires are prohibited from being disposed into the LCID and C&D Landfills and from the WTS.

7. Hazardous Waste and Liquid Waste are prohibited from being disposed into the LCID and C&D Landfills and the WTS.

8. Appliances/White Goods which include items such as; washers, dryers, refrigerators, and air conditioners are banned from the LCID and C&D Landfills and the WTS and shall be disposed through the Prime Contractor with an off-post salvage company or through Defense Reutilization and Marketing Office (DRMO).

9. All landfill users must deliver loads pre-segregated for delivery to the C&D, LCID, MSW and recyclable areas. All landfill users will recycle to the maximum extent possible. Fort Bragg's landfill permits and the NC regulations require a minimum of 40% diversion annually.

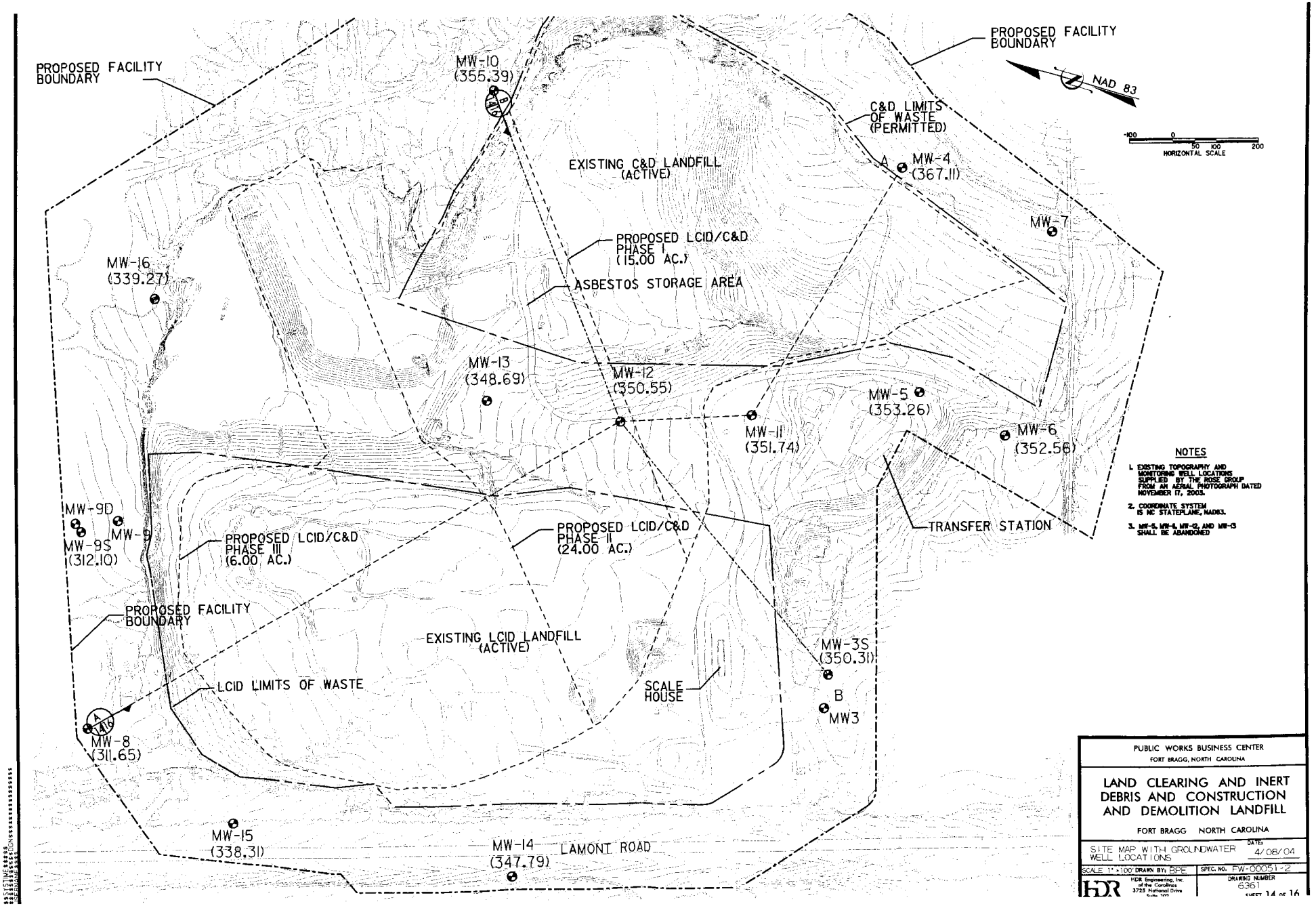
10. A Landfill Disposal Permit is required to enter the landfill. Obtain a Landfill Permit through your Government Representative approval and issued by the Solid Waste Manage from the Public Works Business Center (PWBC), Environmental Sustainment Division (ESD), phone number (910) 396-3372.

11. State Law and Post Regulations require covering of loads to prevent litter. 15A North Carolina Administrative Code 13B.0105(d) states: “vehicles transporting waste shall be loaded and moved in such a matter that the contents will not fall, leak, or spill and shall be covered when necessary to prevent blowing material. If a spill occurs, the transporter shall pick up the material immediately, returned to the vehicle and the area properly cleaned-up.”

12. Prime Contractors are responsible for the waste generated on their sites and transported to the landfills and shall comply with all guidance within this document and other Fort Bragg regulations and policies. The loads coming into the LCID and C&D Landfills and WTS are subject to inspection and screening by the Landfill Operators and/or the Environmental Compliance Branch Personnel to ensure compliance is being maintained. Non-compliant loads will not be allowed to dump and the vehicles may be quarantined and subject to State notification.

APPENDIX D

FINAL GRADE AND GROUNDWATER MONITORING WELL LOCATIONS



PUBLIC WORKS BUSINESS CENTER
FORT BRAGG, NORTH CAROLINA

LAND CLEARING AND INERT DEBRIS AND CONSTRUCTION AND DEMOLITION LANDFILL

FORT BRAGG NORTH CAROLINA

SITE MAP WITH GROUNDWATER WELL LOCATIONS

DATE: 4/08/04

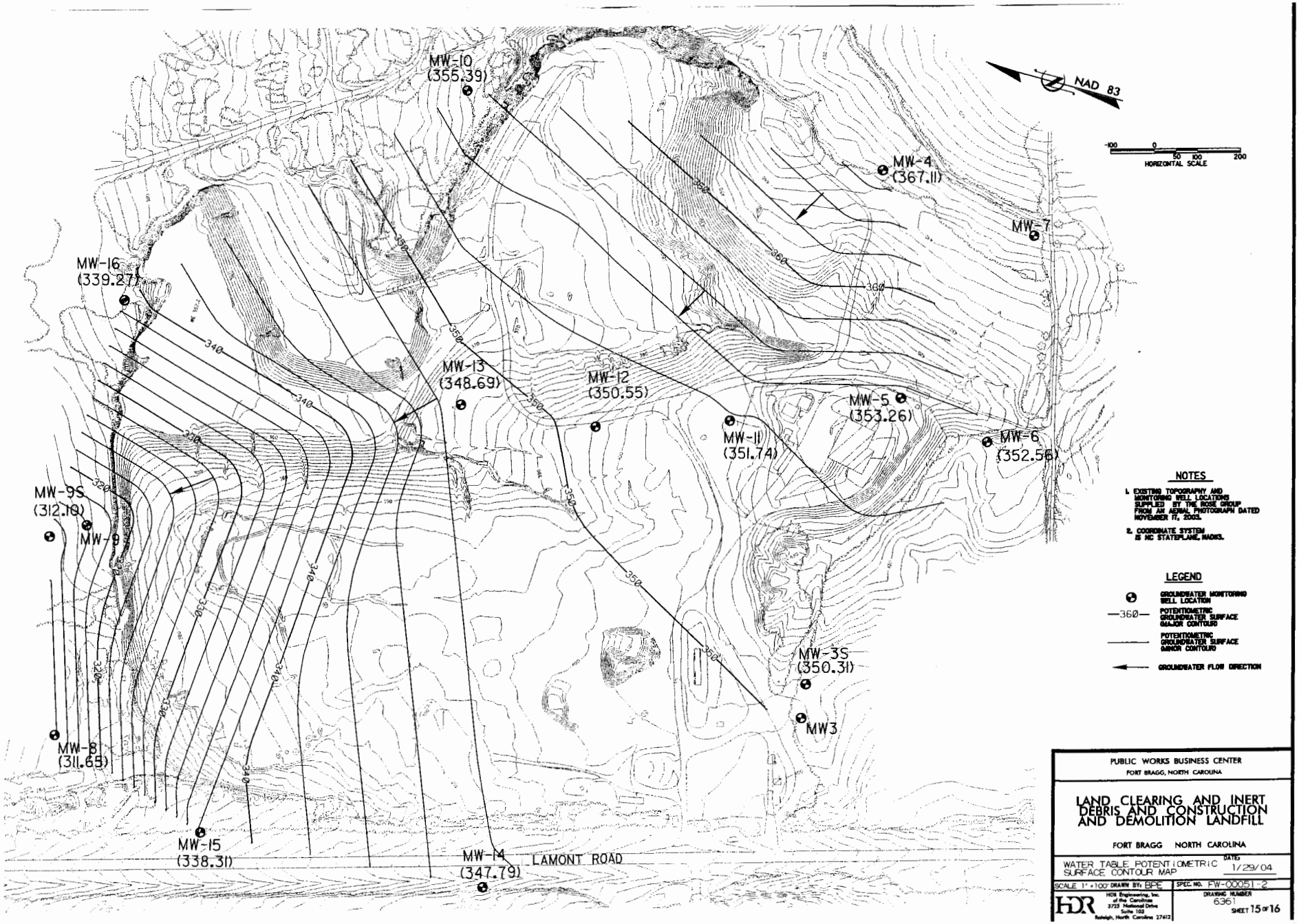
SCALE 1" = 100' DRAWN BY: BPE

SPEC. NO. FW-00051-2

HDR Engineering, Inc. of the Carolinas
3725 National Drive

DRAWING NUMBER 6361

SHEET 14 OF 16



PUBLIC WORKS BUSINESS CENTER
FORT BRAGG, NORTH CAROLINA

LAND CLEARING AND INERT DEBRIS AND CONSTRUCTION AND DEMOLITION LANDFILL

FORT BRAGG NORTH CAROLINA

WATER TABLE POTENTIOMETRIC SURFACE CONTOUR MAP

DATE: 1/29/04

SCALE 1" = 100' DRAWN BY: BPE

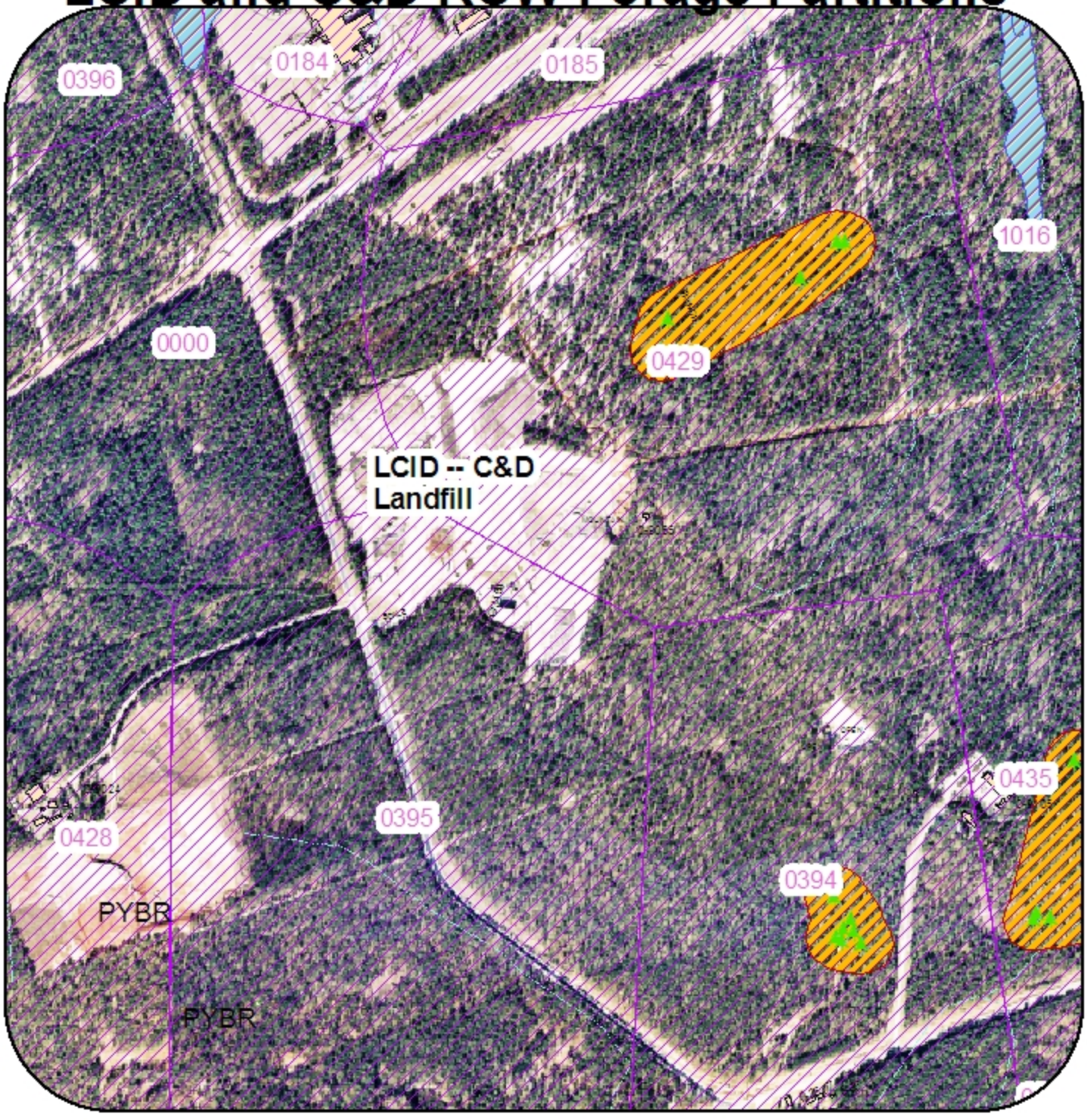
SPEC. NO. FW-00051-2

DRAWING NUMBER 6361

SHEET 15 OF 16

HDR Engineering, Inc. of the Carolinas
3723 National Drive
Suite 102
Raleigh, North Carolina 27612

Appendix E
LCID and C&D RCW Forage Partitions



Legend

- RCW Forage Partitions
- RCW Clusters
- RCW Greenbelt Area
- RCW Trees

Feet
0 250 500 1,000

N

Title: LCID and C&D Landfill Expansion
PN: FW00051-2
Source: M:/Arc/masterCantonment.mxd
Coordinate System: NAD 1983 UTM Zone 17N
Prepared By: Emile Gillin

APPENDIX E

INFORMAL CONSULTATION

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT AGENCY
HEADQUARTERS, FORT BRAGG GARRISON COMMAND (AIRBORNE)
FORT BRAGG, NORTH CAROLINA 28310

REPLY TO

May 3, 2004

COPY

Public Works Business Center

Dr. Garland Pardue
United States Fish and Wildlife Service
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Dear Dr. Pardue:

On April 9, 2004, a site evaluation was conducted for the existing Land Clearing Inert Debris (LCID) landfill off Lamont Road at Fort Bragg, North Carolina. By letter, dated March 16, 2004, the Solid Waste Section, NC Division of Environment Natural Resources (NCDENR) notified Fort Bragg that "The exposed waste of the LCID (permit #26-G) needs to be properly covered with a minimum of 1 foot of soil cover". Failure to properly cover the exposed waste would constitute a violation of State regulations.

Due to the existing height of the current LCID landfill and the State's requirement for 3 to 1 side slopes, an additional 1-foot of cover is required and would mean that the fill footprint (or toe of fill) will be enlarged. Additionally, a perimeter ditch is required and will be excavated at the toe of fill to ensure that no LCID leachate discharges offsite. Project construction would impact approximately 145 loblolly and longleaf pines along the northwesterly edge of the LCID. The next compliance visit is May 1, 2004.

The project falls within two Red-cockaded woodpecker (RCW) forage partitions belonging to clusters 395 and 429. Cluster 395 is an inactive primary recruitment cluster and cluster 429 is a recently active supplemental recruitment cluster. The south section of project in cluster 395's forage partition would not affect any pine trees. However, stand 9092 belongs to cluster 395, which lies adjacent to the proposed action and consists of a 45-year-old loblolly pine. The north section, in cluster 429's forage partition, lies in stand 9081 (see Form 3). Stand 9081 is designated as a 39-year-old longleaf pine dominated area with a site index of 60. The following pine tree totals would be removed along the LCID edge of Stand 9081:

4 to 9.9 inches:	126 loblolly/longleaf pines
10 to 13.9 inches:	8 loblolly/longleaf pines
14 to 17.9 inches:	7 loblolly/longleaf pines
Greater than 18 inches:	4 loblolly/longleaf pines
Total Trees Removed:	145 loblolly/longleaf pines

Since trees will be removed from an actively managed RCW forage partition, potential impacts to supplemental recruitment cluster 429 were

basal area (BA) for stands > 10-inch diameter at breast height (dbh) for pine stands is a total of 9,630. The total acreage of pine stands older 30 years is 253 acres. The forage partition consists of 253 poor quality forage acres (see cluster 429's Form 3). The loss of 145 trees from the edge of stand 9081 would not result in RCW habitat fragmentation.

Further analysis from a field visit indicates no suitable rare plant Saint Francis' Satyr (*Neonympha mitchellii francisci*) habitat occurs at project site as well as and analysis of Fort Bragg's GIS system indicates there are no endangered plants or butterfly colonies at project area.

As a means to offset the loss of pine trees, mitigation will take pla on site. There are a number of existing dirt roads within Stand 9081 tha have been used over the years as illegal access into the LCID. As such, these existing open roadways (about 1 acre in area), within stand 9082, w be the mitigation sites for the proposed action (Figure 1). The approximately 1-acre site would be replanted with long-leaf pine seedling during the FY 05 planting season. This unsuitable habitat, long-term, wi eventually become usable habitat that could be added to the forage partit pine acreages.

In summary, the removal of approximately 145 trees for the proposed action will have no effect on the following federally endangered species, known to occur on Fort Bragg, in Cumberland County: Saint Francis' Satyr Michaux's Sumac (*Rhus michauxii*), Rough-leaved loosestrife (*Lysimachia asperulaefolia*), and American Chaffseed (*Schwalbea americana*) and is not likely to adversely affect the recovery efforts of the RCW on Fort Bragg.

If you have any questions, please contact Mr. Erich L. Hoffman at (91 396-2867.

Sincerely,

Roderick Chisholm

Gregory G. Bean
Colonel, U.S. Army
Director of Public Works
Business Center

Enclosures

RCW Tree

Road/Firebreak

Bragg Boundary

RCW Forage Partition

Forest Stand

Forage Assessment

N

Miles

0 0.08 0.16

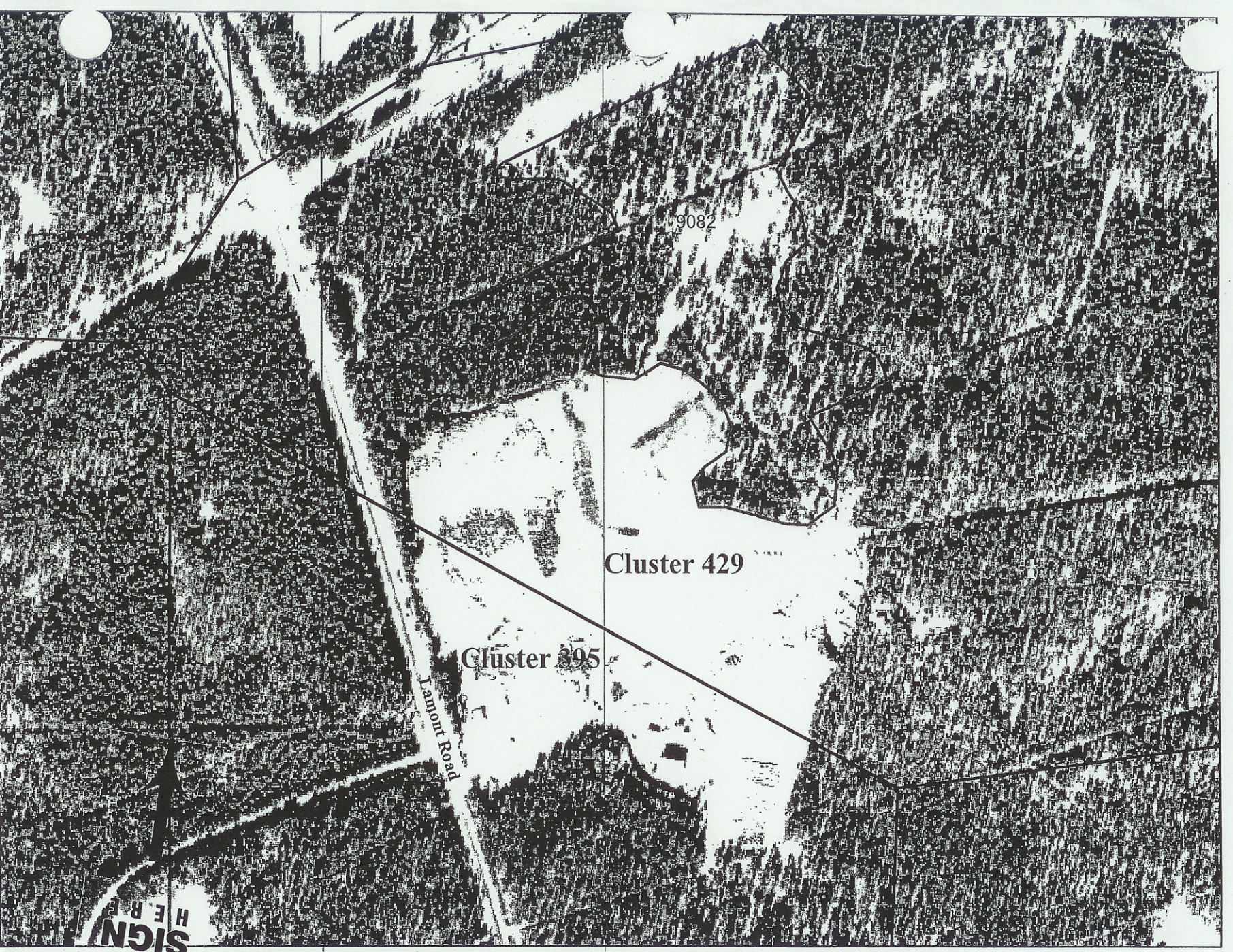


Figure 1. Land Clearing Inert Debris (LCID) Project Area

Forage Partition Boundary

Proposed Mitigation Area

N W E S

0 250 500 Meters

		Criteria A	Criteria A 18	Criteria B	Criteria C	Criteria C	Criteria E	Criteria F %	Criteria H		

Stand	Type	Pine Age	HWD TPA 4-9.9"	HWD TPA 10-13.9"	HWD TPA 14+"	HWD BA 4-9.9"	HWD BA 10-13.9"	HWD BA 14+"	% Hardwood	Total Hwd BA >10"	No HDWD midstory Pine > 30	Project Acres	Total Acres	Good Quality Acres	Poor Quality Acres	Non-suitable acres
1	OPEN	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	40.16	0.00	0.00	40.16
9081	LL	39	4.8	3.6	0.0	1.0	3.0	0.0	6.2	3.0	0	0	12.96	0.00	12.96	0.00

Stand	Type	Pine Age	Pine TPA 4-9.9"	Pine TPA 10-13.9"	Pine TPA 14+"	Pine BA 4-9.9"	Pine BA 10-13.9"	Pine BA 14+"	Total Pine BA (Per/Acre)	Pine BA => 10in (Per/Acre)	Total Pine BA => 10"	Stands Older than 30 (10in BA * Ac) (BA 40-70)	Stands older than 30 Pine BA <10in (BA < 20)	Stands older than 30 no pine midstory	Total 30 Yr. old stand BA Stands > 80 BA	Total Acres
1	OPEN	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	40.16
9081	LL	39	80.4	31.9	9.1	25.0	23.0	13.0	61.0	36.0	467	467	0	0	0	12.96
9082	LL	51	25.7	14.3	7.5	6.0	12.0	11.0	29.0	23.0	888	0	0	0	0	38.62
9083	LL	50	30.7	19.3	15.8	9.0	15.5	22.0	46.5	37.5	5,063	5,063	0	0	0	135.01
9091	LL	50	25.2	26.4	18.1	6.8	21.1	35.2	63.1	56.3	1,637	1,637	0	0	0	29.07
9092	LB	45	19.1	31.5	15.8	5.3	24.0	20.7	50.0	44.7	1,189	1,189	0	0	0	26.60
9098	LL	49	11.3	12.6	17.2	3.7	11.1	24.7	39.5	35.8	387	0	0	0	0	10.80

Cluster	**429**
Good Quality Acres	0.0
Poor Quality Acres	253.1
Non-Suitable Acres	40.2
Non-Contiguous Acres	0.0
Project Acres	0.0
Total Acres	**293.2**

Pine BA > 10in (All Pine Stands)	9,630.4
Pine Stands > 30	
Acres of Pine Stands > 30	253.1
Average Pine BA (Stands 40-70)	41.0
Average Pine BA (Pine <10 in of stands <20 BA)	0.0
Acres of stands with no hdwd midstory	0.0
Acres of stands with no pine midstory	0.0
Total BA (Incl hdwd) stands BA > 80	0.0

NRS
ERIC

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

June 4, 2004

RPE
7 Jun

Colonel Gregory G. Bean
Department of the Army
Director of Public Works Business Center
Headquarters, XVIII Airborne Corps and Fort Bragg
Fort Bragg, North Carolina 28310

Dear Colonel Bean:

The Fish and Wildlife Service (Service) has reviewed your May 3, 2004 letter regarding measures Fort Bragg must undertake to comply with State regulations pertaining to management of the installation's Land Clearing Inert Debris (LCID) landfill. The LCID landfill is located on Lamont Road, Fort Bragg, in Cumberland County, North Carolina. The project falls within timber stands Fort Bragg is managing as foraging and nesting habitat for the federally listed endangered red-cockaded woodpecker (*Picoides borealis*; RCW). Our comments are provided in accordance with section 7(a)(2) of the Endangered Species Act (Act) of 1973, as amended (16 USC 1531 et seq.).

According to your May 3, 2004 letter, the North Carolina Department of Environment and Natural Resources, Solid Waste Section informed Fort Bragg that the exposed waste in the LCID landfill needs to be covered in a minimum of one foot of soil cover. To achieve compliance with the State's guidance, Fort Bragg plans to modify side slopes, insert ditches, and enlarge the fill footprint. Completion of the project would require the removal of about 145 loblolly (*Pinus taeda*) and longleaf pine (*Pinus palustris*) pine trees.

The project falls within the ½ mile radius foraging partitions for RCW clusters 395 and 429. Cluster 395 is designated as an inactive primary recruitment cluster and 429 is a supplemental recruitment cluster that has been recently activated. No pine trees in Cluster 395's partition will be affected. Construction/earthmoving would remove foraging habitat for cluster 429 from the following diameter at breast height (dbh) classes:

4 to 9.9 inches:	126 stems
10 to 13.9 inches:	8 stems
14 to 17.9 inches:	7stems
Greater than 18 inches:	4stems
Total Trees Removed:	145 stems

The foraging partition for Cluster 429 contains 293.2 acres of which 253.1 are moderate quality/usable foraging habitat. Total pine basal area within the partition for pine trees > 10 inches dbh is 9,630 square feet (ft^2). A review of the stand data provided, in comparison with the recovery standard described in the RCW Recovery Plan (Service 2003) indicates that the foraging partition for cluster 429 would provide 3,673 pine stems/ 5404.1 ft^2 for trees ≥14 inches dbh. These stands average 14.5 stems/21.3 ft^2 per acre for pine stems ≥ 14 inches dbh (target average is 18 stems/20 ft^2 /acre minimum). The tree removals described in the project description should not appreciably affect the availability of suitable habitat within these foraging habitat partitions.

To attenuate the long-term effects of tree removal in cluster 429's foraging habitat partition, Fort Bragg plans to reforest dirt roads within stand 9082 with longleaf pine seedlings during the Fiscal Year 2005 planting cycle. A field visit indicated that no suitable rare plant or Saint Francis' satyr (*Neonympha mitchellii francisci*) habitat occurs within the project site.

Based on the information provided in your May 3, 2004 letter, the Service concurs with your determination that this project is not likely to adversely affect the RCW or any other federally listed species, their formally designated critical habitat, or species currently proposed for federal listing under the Endangered Species Act, as amended. We believe that the requirements of section 7(a)(2) of the Act have been satisfied. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

If you have any questions regarding this matter, please contact Mr. John Hammond at 919-856-4520 (Ext. 28). Thank you for your continued cooperation with our agency

Sincerely,

Garland B. Pardue

Dr. Garland B. Pardue
Ecological Services Supervisor

cc: Ralph Costa, USFWS
Pete Campbell, USFWS

Literature Cited:

U. S. Fish and Wildlife Service. 2003. Recovery Plan for the red-cockaded woodpecker (Picoides borealis): second revision. U. S. Fish and Wildlife Service, Atlanta, GA 296 pp.